PROCEEDINGS

# II PROVINCIAL CONFERENCE ON TRAFFIC SAFETY FOR COMMUNITY LEADERS

NOVEMBER 29 AND 30, 1984
VANCOUVER, BRITISH COLUMBIA

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# THE II PROVINCIAL CONFERENCE ON TRAFFIC SAFETY FOR COMMUNITY LEADERS

Community leaders and international authorities on traffic safety met in Vancouver on November 29 and 30, 1984 to seek solutions to the massive problem of motor vehicle crashes in British Columbia.

Leading sociologists, psychologists, doctors, researchers, highway engineers, and safety experts from British Columbia, Canada and the United States addressed the 1984 *Community Leaders Conference on Traffic Safety* which was attended by 450 people.

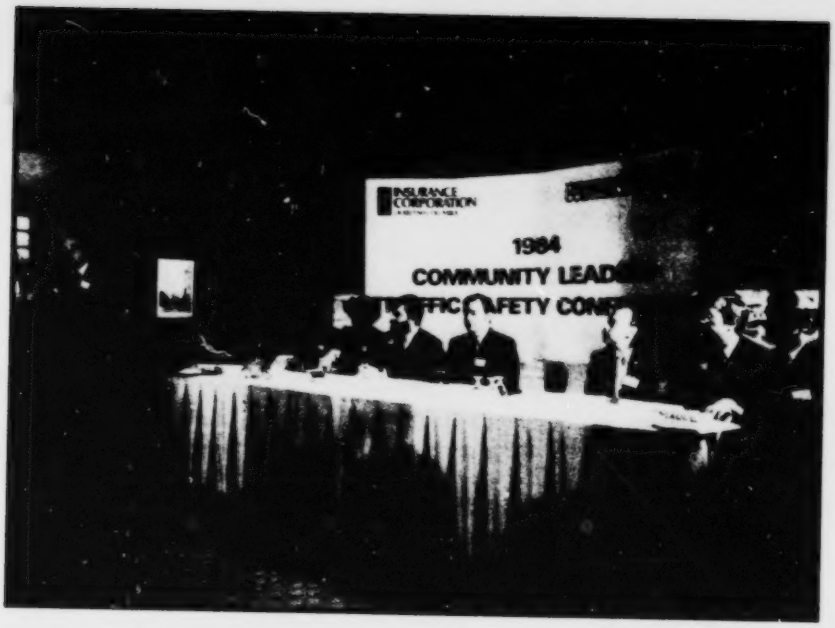
The event was sponsored by the Insurance Corporation of British Columbia and the Province of British Columbia's CounterAttack Drinking/Driving Program.

Delegates attending the conference included elected officials from communities throughout the province and representatives from a wide range of organizations: the education system, law enforcement, health and safety groups, the hospitality industry, management and the workplace, service groups and consumer organizations. They had the opportunity to share their views and concerns with conference speakers and fellow delegates.

"Our aim at the Corporation is to work with you as community leaders at provincial, regional and community levels in order to have a more positive impact on this massive traffic problem," said Tom Holmes, President of the Insurance Corporation of British Columbia. He quoted Thomas Morrell, past chairman of the Institute for Highway Safety who said, "There is every reason for insurers to assert their role in crash loss reduction. It is difficult to conceive of any other form of enterprise in which the same congruity of public and private interest exists."

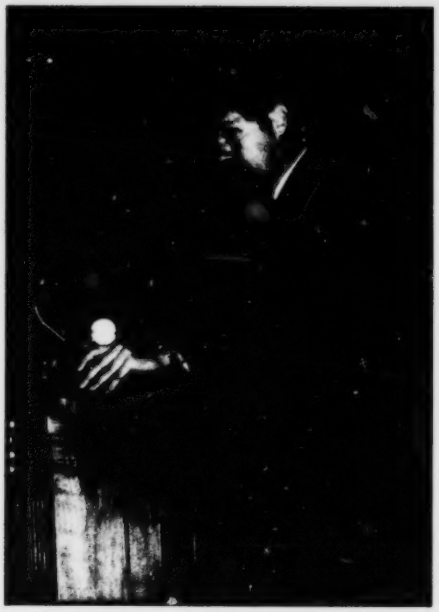
Conference speakers included: Dr. Laurence Ross, author and world expert on drinking/driving prevention; Dr. Patricia Waller, who spoke on societal responsibility for drinking/driving; Dr. Kimball I. Maull, a physician who has studied the relationship between alcohol abuse and trauma; Dr. Herbert Simpson, Executive Director of the Traffic Injury Research Foundation who summarized the Canadian problem; Dr. Leonard Evans, who discussed his research at General Motors Laboratories; Dr. Anthony Stein, a psychologist researching in-vehicle drinking/driving deterrents; and Dr. Alan Donelson, who outlined varied approaches to the traffic crash problem.

The conference was organized by the Traffic Safety Education Department of the Insurance Corporation of British Columbia. Established in 1981, the department is responsible for the design and development of traffic safety programs within the schools, police, health, workplace, student services, municipal government, and community systems of the province.




**Press Conference**

**Ms. Patricia Manduca**

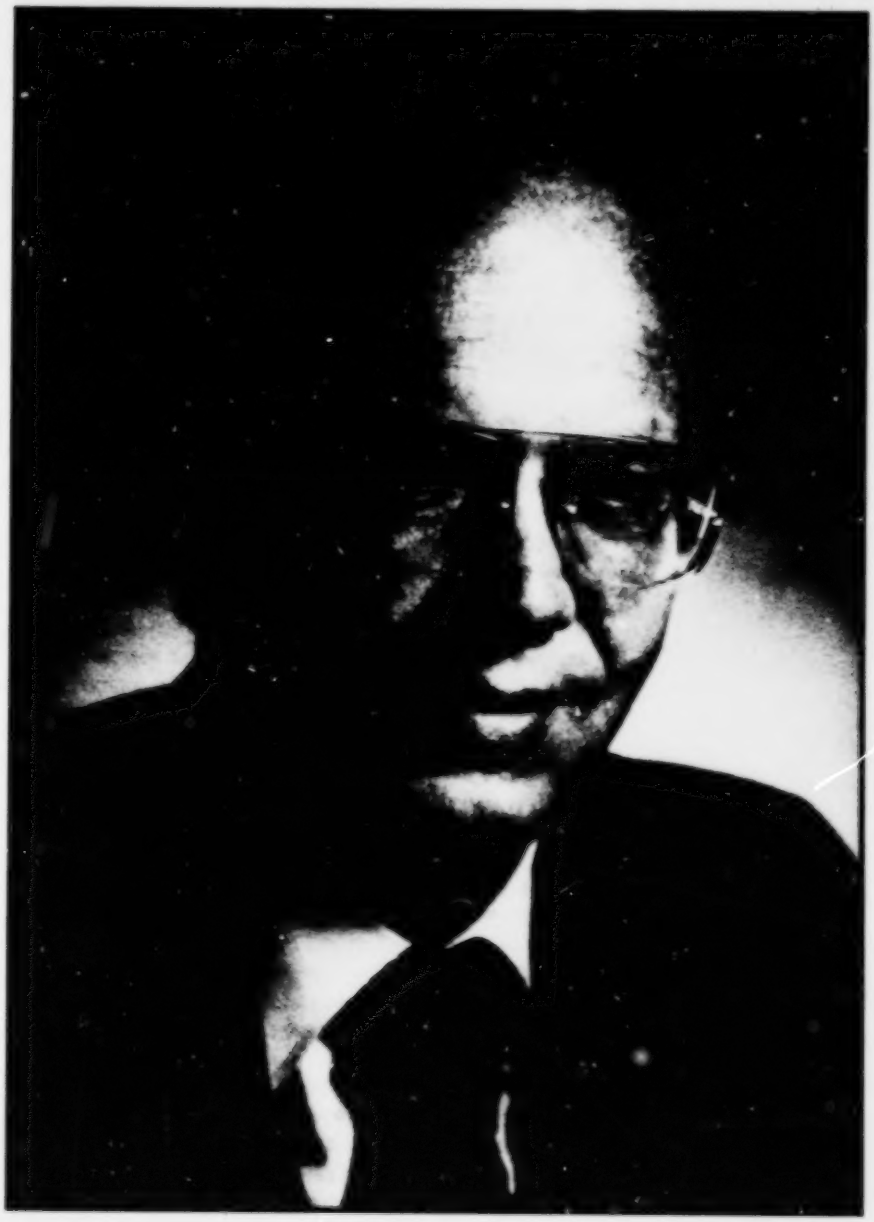


Dr. Kimball Maull

Mr. Thomas Holmes and Dr. Laurence Ross

# S P E A K E R

**MR. THOMAS E. HOLMES** is President and Chief Executive Officer of the Insurance Corporation of British Columbia. He joined the Insurance Corporation in 1976 as Senior Vice President, Auto Insurance. Prior to joining ICBC, Mr. Holmes had established Holmes Insurance Agency Ltd., Vancouver. He moved to the British Columbia Automobile Association in 1966 and during the next ten years, his responsibilities included those of General Manager of the operations of the B.C. Motorists Insurance Company, the BCAA Insurance Agency Ltd., BCAA Holdings Ltd., the BCAA Travel Agency, and WestWorld Publications Ltd.



# INTRODUCTION

**Speaker:** Mr. Thomas E. Holmes, President, Insurance Corporation of British Columbia

Today we have over 450 delegates gathered at a conference that is designed to raise awareness. Awareness not only as to traffic problems — we are all too well aware of them — but also awareness of the need for leadership. This is a conference for community leaders. Some of you have been elected, some of you have been appointed, some of you have been assigned by virtue of your jobs, and others of you have come as concerned individuals. We trust that all of you, as delegates here, will benefit from the two days, as you hear and meet many national, international, and local experts in the field of traffic safety.

Our aim at the Corporation is to work with you as community leaders in the province — provincial, regional, and community levels — in order to have a more positive impact on this massive traffic problem. I believe that Thomas Morrell, a former chairman of the Institute for Highway Safety, in a speech to the Economic Club in Detroit some years back, fairly well summed up the reasons why automobile insurance companies need to be interested in traffic safety. Said Morrell, "Any means of reducing the losses entering the insurance system lowers our costs, reduces discontent among our customers, and broadens our market. The crash loss reduction efforts of automobile insurance, which are growing in scope and effectiveness, are held together by a glue of self interest, and I know of no other stronger glue. There is every reason for insurers to assert their role in crash loss reduction. It is difficult to conceive of any other form of enterprise in which the same congruity of public and private interest exists."

As President of the Insurance Corporation, I must say I agree with Morrell's spoken words in 1971 because they still hold true today, some 13 years later. At the present time, the traffic problem in British Columbia means that the Insurance Corporation handles approximately 2,000 claims a day, and pays out an average of $2.4 million every working day. Also, each year the Corporation handles at least 100 catastrophic injury claims amounting to more than $250,000 each in cost. In addition to all the immeasurable pain and suffering that these claims alone have, the cost is more than $25 million annually. Our Corporate philosophy states that the Corporation will provide leadership to reduce the severity and frequency of accidents and claims. Therefore, our efforts include the operation of the Traffic Safety Education Department, the Road Planning Department, and the cosponsorship of the CounterAttack Program.

The point is, British Columbia cannot afford to see over 500 people die each year. If I may relate that to the number of people in the room — there are less than 500 in the room. Our society seems to find it acceptable to kill one or two people every day. What would the expression be, and what would the feeling be, if we were able to have all of those people killed at one time over a short period? There would be headlines all over the world. But it's funny how we accept the death of one or two people each and every day of the year. In addition to that, we have some 23,000 people injured.

I suggest to you that that is an unacceptable toll. That is why I believe and I trust that our energy as leaders, and our commitment to traffic safety, will allow you and me to work even more closely in the future. Good luck in your conference.

# SPEAKER

**THE HONORABLE JAMES HEWITT** is Minister of Consumer and Corporate Affairs and the Minister responsible for the Insurance Corporation of British Columbia. First elected in 1975, he has served as Minister of Agriculture and Minister of Energy, Mines and Petroleum Resources. He served on the Penticton City Council from 1971 to 1976; as Director of the Okanagan-Similkamen Regional District Board from 1972 to 1974, and as Director of the Union of British Columbia Municipalities from 1974 to 1976.

# INTRODUCTION

**Speaker:** The Honorable James Hewitt, Minister of Consumer and Corporate Affairs

Ladies and gentlemen, it's a pleasure for me to be here as Minister responsible for the Insurance Corporation of British Columbia and one of its directors, and I am pleased that you're here as well, because you are "community leaders." You are the people who are supposed to give direction and guidance to the people you represent, communities in which you live, and the circle of influence which you have over other people in the province of British Columbia and elsewhere. Before I go on, I would like to also extend my welcome to those who are from out-of-province and out of the country. It's nice to have you with us this morning. I'm Minister responsible for the Insurance Corporation of British Columbia, and it's not just an insurance corporation, it's a state-owned, automobile insurance company. It was established by a previous administration. It has been operating now for ten years in the Province of British Columbia and I'm the first to say as Minister responsible, it's done a darn good job. It's done a good job in settling claims, it's attempting to do a better job in preventing accidents, and to the directors, management, staff, and Patty, thank you for the effort that you've put into it.

Just to give you a problem that I face, I am also Minister responsible for liquor distribution, and liquor control and licencing in this province. That's the monkey on my back. You have an excellent list of speakers. I know from their various titles they're going to talk to you about the young driver, the drinking driver, the problems that they see developing, and possibly they're going to give you some suggestions, some recommendations on how you deal with those problems. I want to leave you a message, and I'll start with a couple of words. The first is prevention which is the key to this whole conference. How do you prevent accidents? We can prevent them very easily; if you want to relate them to the automobile, we can ban the automobile. That will prevent all automobile accidents. Stupid solution to a problem. We could bring back prohibition, because that would take the drinking driver off the road, "maybe." Stupid solution to the problem. We could, and I'm sure you're going to talk about it today, and debate it and be led in discussion by speakers, increase the age where you are able to get a drink — from 19 to 21. You're probably going to talk today about the young driver and whether we should increase the age where you have the privilege of driving from 16 to 18, or 19 or 21. We could do that. One of the problems of course, is the young person behind the wheel of a car, particularly if there is alcohol involved: someone's humorous solution to the problem was maybe we should start them drinking younger so by the time they got to the driving age, they would know how to handle the drink: they'd be able to drive better. That's a stupid solution too. My question, as a politician, individual, father, and community leader, is do we always have to penalize the majority to get at the minority? I don't think that's the answer. I don't think it's the answer to attack 90 percent of the population to get at the 10 percent that abuse the privilege of driving and/or drinking. What we really need is prevention through education and information, through you. So I've given you three words. I've given you prevention, education, and information. I'll give you another one. It's called communication, and that's what this is all about. Hopefully we'll get the right message to you today and tomorrow, and you'll get the right message to the people you influence. We can legislate almost anything we want to, but is it effective? We legislate that you can't get a licence before age 16, we legislate that you can't drink until you're 19, but I think Mr. Holmes or some of his staff today or tomorrow will probably give you some statistics which will show you that many young people under the age 19 are involved in automobile accidents because of consuming alcohol. So there's an indication that a law does not solve the problem. What does solve the problem is making sure that people are aware of the seriousness of it, and that you people indicate to them the message that you can have the privilege of driving, you can have the privilege of drinking, but for heaven sakes don't abuse that privilege. So, ladies and gentlemen, I want to thank you for taking time out of your busy schedules to attend this conference. We depend on you.

# S P E A K E R

**MS. PATRICIA MANDUCA** is Manager of the Traffic Safety Education Department of the Insurance Corporation of British Columbia and Director of CounterAttack School and Community Programs for the Ministry of Attorney General. In 1981, she was appointed by the Insurance Corporation to establish the Traffic Safety Education Department and to coordinate CounterAttack for the Insurance Corporation of British Columbia.

# THE MASSIVE PROBLEM

**Speaker:** Ms. Patricia Manduca, Manager, Traffic Safety Education Department; Director, CounterAttack School and Community Programs

"If the current trend is not broken, more than six million people will be killed, and more than 350 million will be injured in road traffic accidents between now and the turn of the century." That quotation states the catastrophic proportions of the traffic problem on a world wide scale.

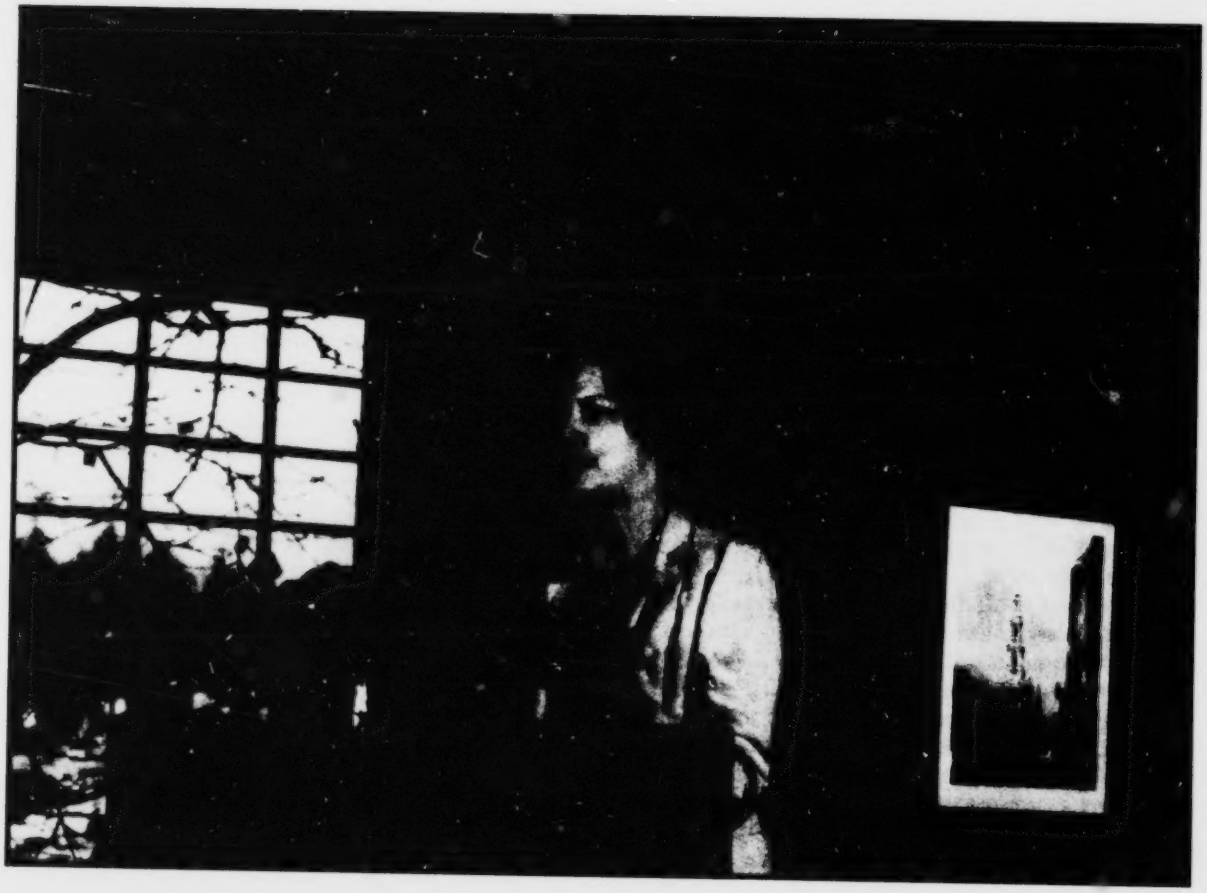
In Canada, in 1983, approximately 4,209 people were killed. That number equates to the population of the city of Duncan. In Canada, in 1983, approximately 224,304 were injured. If we were to combine Burnaby and Richmond, those two municipalities' populations represent the number injured. We are talking about people — approximately 626 people per day, either dying or being injured on our roads in Canada; 26 people an hour.

Thinking in terms of our own province, British Columbia — in 1983, 525 people were killed and 22,428 injured. Again, we are talking about people — approximately 62 people injured or killed, per day, or 2.6, — approximately three people — every hour in British Columbia, injured and killed on our roads.

It is this problem that we're gathered here to discuss in the course of the next few days, and, hopefully, as leaders, to return home motivated enough to take some type of countermeasure action. Each of us here can go beyond the personal response, each of us are in a position to try to implement a project for our own cities, workplaces or organizations. As community leaders in British Columbia, we can make a difference.

# S P E A K E R

**DR. PATRICIA WALLER** is Research Professor of the Department of Health Policy and Administration at the University of North Carolina. Other positions she has held include Associate Director, Highway Safety Research Center; President, American Association for Automotive Medicine; Chair, National Academy of Sciences Transportation Research Board Conference; Chair, Transportation Research Board Group Three Council; member, National Highway Safety Advisory Committee; member, President's Council on Spinal Cord Injury; and member, White House Conference on Aging Ad Hoc Advisory Committee. She is also Associate Editor of the *International Journal of Accident Analysis and Prevention* and serves on the Editorial Board of the *Journal of Safety Research*. Dr. Waller's primary interest is the application of research findings.



# THE NEED FOR IMPLEMENTATION OF TRAFFIC SAFETY RESEARCH THROUGH LEGISLATIVE/ADMINISTRATIVE MEASURES AND THE NEED FOR EVALUATION OF SUCH MEASURES

**Speaker:** Dr. Patricia Waller, Research Professor, Department of Health Policy and Administration, University of North Carolina

It's a pleasure and a privilege to be here. I'm most impressed with the turnout for this conference. The title in the program doesn't quite fit what I thought I was going to talk about, so I hope you'll bear with me.

The things I will be saying are based primarily on research evidence and experience in the United States. Now you all will have to judge how applicable it is to your situation here. My experience in coming to Canada on previous trips has been that the situation is much more rational here than anything I've found in the States, so if it doesn't apply, don't worry about it. I realize that it is a different situation here.

As all of you know, motor vehicle injuries are a major public health problem although it's only relatively recently that we, in the States, have begun to recognize this fact. This is one of the things that I think is so neat in the provinces in this country where the insurance is handled by the government. I think you've been much quicker to see and appreciate this relationship than what we have. In the United States it has been shown that the costs associated with motor vehicle injuries are second only to the costs for cancer. This is because motor vehicle injuries are so frequent and because they strike the young disproportionately, and when a young person is killed or seriously injured, the loss to society is much greater.

Now it's long been known that alcohol is a major factor in serious and fatal crashes. Recently, citizen action groups have spurred state legislatures and our Federal Congress to take action in this area. A Presidential Commission on drunk driving was appointed and its recommendations have been given very serious consideration. Today I'd like to share a few thoughts with you about how we decide on countermeasures for societal problems, and more specifically, how we decide on countermeasures for the problem of drunk driving.

The way we respond to this problem, or any other problem, is to a very large extent determined by how we define the problem. Historically, this problem has usually been seen as belonging to a few individuals who cause trouble for the rest of us. Less frequently, it's been viewed as a consequence of larger, societal conditions. Now the first approach sees drunk driving as an issue of personal responsibility and choice. Here we're dealing with immoral behavior that has been defined as criminal in our society. As such, we are operating in the realm of blame, guilt, prosecution, and punishment. This is a time honored approach to health problems whereby we focus on what is different about the individual who shows the symptoms, what can be done to identify high risk individuals, and what we can do to modify them in such a way as to lower their risk.

On the other hand, the problem of drunk driving may be seen as the product of a system of complex interactions of causal factors. We can take a more comprehensive look at the entire system and examine where it may be most feasible and most effective to intervene, to modify the rates of injury, and death. This second approach illustrates the public health philosophy, although in the area of injury control, even public health officials have been slow to recognize the applicability of this approach. This systems approach assumes that at least some of the problem is societal, and that some of the solution lies in societal actions. Now, of course, these approaches are not mutually exclusive but they do tend to lead to different trains of thought and different countermeasures.

Let's look at some of the countermeasures that follow from each of these ways of thinking. First are the countermeasures that are based on the individual responsibility view. In 1976, when we were celebrating our bicentennial in the United States, Time magazine ran a number of bicentennial essays on different topics and one of them was written by John Knowles, who at one time was our Secretary of Health, Education, and Welfare. In it he pointed out how, when our country got started, there were many illnesses that were looked upon as the work of the devil. It was thought that people may have been punished for sins they had committed, and sometimes the treatments that resulted from this were ones that would be considered very harsh by our standards today. Even when I was growing up in the 30's and 40's, I remember things like tuberculosis and cancer were conditions that really weren't talked about very publicly. I mean in polite

society it just wasn't done, you didn't get those things. A current example of how blame and stigma are attached and imputed to people who are afflicted by health problems is the public's reaction to AIDS. Now regardless of the morality or immorality of a health problem, we do need to ask: how effective are the treatments that derive from the view that the problem lies within the individual?

Countermeasures for drunk driving that are based primarily on the moral approach and, hence, focus on the individual include efforts to increase the apprehension. We're going to step up enforcement, increase the certainty of punishment and increase the severity of punishment. Increasing the severity of punishment is always very, very popular. Pre-conviction educational efforts also attempt to persuade the individual to choose not to drive and drink, so they're also getting at this idea we're going to get you not to make this choice.

Now the evidence on enforcement is that the probability of being apprehended on any given drunk driving trip is in the order of one in 2,000 to perhaps as high as one in 200. Consequently, the likelihood of a person experiencing many "successful drunk driving trips" is pretty high. One is going to experience quite a few of those before he ever gets picked up. Furthermore, if we focus primarily on those who are detected, then our efforts are really affecting only a very small part of the total offending population. Although highly publicized enforcement efforts are associated with reductions in drunk driving, the efforts tend not to be long lived, as the public gradually comes to recognize what the true risk of detection is. Although there's reason to believe that increasing the certainty of punishment is effective, when the risk of apprehension is so low, the certainty of punishment cannot be very high for any given trip.

Even for apprehended drivers, there are differences in who is convicted and how severe the punishment is: persons with good legal counsel tend to come out better. Post-conviction efforts focus on trying to do something about the person who has been detected and convicted, and so now we send them to alcohol education schools. These have not been shown to be very effective and in some instances this treatment has been shown to be associated with a higher probability of recidivism.

The countermeasure aimed at the individual that has been shown to be most effective to date is licence suspension, although there are some problems that I won't go into right now with this countermeasure as well. But overall the evidence and countermeasures focusing on individuals suggests that these approaches are not likely to have major lasting impact on the overall problem of drunk driving.

It's interesting to me that of the 88 recommendations that were made by the Presidential Commission on Drunk Driving, over four-fifths were based on the premise that drunk driving is a matter of personal choice, and should be dealt with primarily by programs targeting the individual. This emphasis reflects the values of a society that still emphasizes personal fault and individual blame. Although we have accepted the concept of preventive measures regarding the common communicable childhood diseases, we have been much slower to recognize how society can similarly intervene to reduce injury-induced morbidity and mortality.

So what about countermeasures that are based on a societal approach? There's not as much evaluative research of these countermeasures, but what there is suggests that they may offer greater promise for lasting effects. First of all, we can talk about reduced alcohol availability. Well, ever since the great Prohibition experiment there's been opposition to any efforts to restrict availability of alcohol — and yet there are many ways in which we do restrict it. We restrict it in terms of where it's sold, when it's sold, how much we sell to any one individual, and to whom it's sold.

More recently, strategies have been developed for server intervention, providing training of servers and legal measures to define responsibility, and liability. Some very interesting work is going on on environmental design of drinking establishments. There's reason to believe such design affects how much alcohol people consume at one time.

Tax policies are another potential countermeasure. Tax policy strongly affects the price of alcohol which in turn has been shown to be related to how much people consume. There is some evidence that increased taxes, and thus increased costs, differentially reduce the consumption of problem drinkers, and in turn are associated with decreases in the mortality associated with cirrhosis of the liver.

Alcohol advertising, I feel, is an area that is in need of greater attention. In the United States, the industry has generally observed self-imposed restriction, in terms of where advertising may be placed. Commercials for distilled spirits usually do not appear on television. On television commercials people are not shown actually

consuming beer or wine. Although most people think they are — they're very effective in communicating the impression — if you look closely, that's not happening. Studies show that alcohol advertising, in its present form, associates alcohol with being beautiful, handsome, glamorous, rich, successful, happy, and living the good life — although there's no empirical evidence that alcohol contributes to any of these characteristics. There is evidence that those who appear to be most affected by the advertising are young people, including early teens, and problem drinkers.

Another message that is communicated through our advertising, as well as through some of our other policies, is that beer and wine really aren't that serious: they don't count as much, even though studies of who's actually out there drunk on the road indicates that beer is far and away the biggest problem. When we have different ages for purchasing beer and wine as opposed to distilled spirits, and different policies on where it can be purchased, and on advertising, we are, inadvertently or otherwise, communicating the message that beer isn't important. I'm sure all of you know, however, that a beer equals a glass of wine, equals a cocktail.

Perhaps even more important than alcohol advertising is the content of television programs, and perhaps movies as well. Research findings indicate that current television programming may be teaching our youth that it is acceptable, or even desirable, to consume large quantities of alcohol. Analysis of prime-time television programs shows that more than half of the drinking seen is problematic in nature, in terms of the quantities that are consumed. It frequently occurs during or just after work, and by far the most frequent reason for drinking is in response to a crisis. Driving is frequently shown after drinking, and in most instances the drinker is a good guy and suffers no adverse consequences from any of this.

Television programming constitutes a powerful message that is communicating a level of drinking that is far greater than what is reported from any of the studies of what's going on in the real world. The programs, in effect, are presenting a norm that does not exist in the real world at the present time. The combined impact of television advertising and television programming has not been seriously considered in relation to its effects on public norms and values, particularly for young people. There has been a lot of research that shows that violence and aggression on television does very much have an impact on young people, that it does translate into more violent and aggressive behavior. There is not nearly as much research that has been done in *this* area, but at least there's some good reason to believe that it does have an effect.

We spend billions of dollars on our public education system; we hire specially trained experts to develop and teach materials designed to build on what has previously been taught. At every level of government there are official bodies that are accountable to the public, and are committed to maintain and enhance our public education system. We clearly take it very seriously, yet we know our children spend more hours watching television than they spend in school. Where are the experts responsible for what youngsters are learning from this other powerful source, where is the public accountability? In commenting on the potential effects of such messages, one writer has said, "Societal pressure toward conformity and drinking too much is supported by the frequency with which heavy drinking is depicted as associated with success in fiction and the modern mass media. Over and over again, our population is exposed to the image of beautiful women and handsome men, consuming what for most people would be too much alcohol, and then proceeding to be successful, and outwitting their adversaries, driving their cars at high speed in heavy traffic, or on mountain roads, catching a criminal, or making magnificent love."

By the time a young person is old enough to get a driver's licence, he or she has been the recipient of thousands of messages, developed by the finest talent on Madison Avenue that money can buy, encouraging the excessive use of alcohol, and frequently in combination with driving. It is unrealistic to expect that a few hours in driver education, or even many public service announcements, can counter the cumulative impact of years of such learning.

I'd like to say something about viewing drunk driving as a major public health problem. It is a basic principle of public health that we deal with preventive measures rather than focus most of our efforts on treatment after the fact. In other words, we focus on the total system in an attempt to intervene before the problem materializes. When we focus primarily on the arrest and conviction of drunk drivers, and the treatment and rehabilitation of the injured, we are unlikely to achieve lasting affects of any magnitude.

The classic public health study of cholera, in 19th century London, illustrates the differential effects of focussing on individuals, as opposed to getting at the source of the problem. It was observed that people were coming down

with cholera all over the place. But it was observed that the people who were drinking from one well were much more likely to contract this disease then those who obtained water from a second well, and so steps were taken to close the contaminated well. It turned out they were both getting their water from the Thames River, but one was getting it upstream and one downstream, and in between there was a hospital dumping all of its sewage into the river. Now this approach of closing the well is, first of all, much more effective in combating the problem and, second, it's much less expensive than going around trying to educate all the mothers: "You've got to boil this water before you give it to your children, and if you don't, we're really going to nail you to the wall for being careless." Just closing the well is cheaper and more effective. Simply telling everyone to use the water from one source and not the other, without taking steps to remove the source of contamination, is much less effective.

In one sense, the social climate in which our children and youth are reared may be considered to be contaminated with messages and influences that are encouraging them to engage in drinking and driving behavior. We can admonish them not to do so and we can arrest and punish those who transgress and are detected, but we can also take steps to alter some of the sources of the contamination. Now I recognize the problem is not quite so simple as a contaminated well, but the analogy still holds. The public health experience suggests that measures aimed at modifying some of the causal influences are more likely to be effective and at lower cost.

A judge from Oregon, in discussing this problem, expressed some of his misgivings in dealing with drunk driving offenders, especially young ones. He said, "In Oregon alcohol is sold by the state," and he continued, "You could consider the state a major drug pusher that depends on sales for income. Then, when someone slips up and uses too much, the same state condemns him and invokes sanctions." Now enforcement, prosecution, and sanctions are necessary components of any comprehensive effort to reduce the injury and death from motor vehicle injuries. But it is at least as important to examine the policies and conditions that are not simply allowing drunk driving, but in some instances, actively and energetically encouraging and guaranteeing its occurrence.

I'd like to share with you briefly something that happened; it's going on right now in the States. Last January, a researcher in this field was speaking at a meeting in Washington, and he spoke about coming to Washington for a meeting the previous November. He came a day early because he heard that Stevie Wonder was going to be performing at the Capitol Center, in Maryland outside of Washington — a place that has a lot of rock concerts, a lot of sports events. I don't know how many people it holds, but it holds lots of people, and it tends to attract a relatively young audience.

So he got his ticket to go out and hear Stevie Wonder, and when it came time to go, he found out that at that time of night there was no public transportation out to the Capitol Center. So he had his ticket; he'd come early; he took a cab. It cost him an arm and a leg to get there. It was supposed to start at 8:00 or 8:30. He got there on time and the parking lot was a sea of automobiles. Stevie Wonder didn't show up until after 10:00, but the concession stands were selling beer like mad. A few of them also sold soft drinks but the lines were very long there, and those were the only places where they were carding anybody, checking their I.D. But all of the servers were wearing buttons that said, "Friends don't let friends drive drunk."

He had made arrangements for the cab to come back at 11:30 so he had to leave early. He said it was still going strong when he left. Now, he said by that time, they were stumbling in the aisles, and there were more graphic descriptions of what was going on that I won't go into here. But, very clearly, at the end of that concert, all of these people were going to come out, they were going to get into their cars and drive off. Now I've heard enforcement people say that in those situations it's really arbitrary which one you pick out, but they were handling this problem by picking them out and nailing them to the wall to really make examples, and show the public they mean business about this drunk driving.

The real climax to the story came in May when there was a big national conference down in Orlando, Florida. Life Savers Three was cosponsored by the United States Department of Transportation, the National Safety Council, and the National Association of Governors' Highway Representatives. At a luncheon there, the United States Department of Transportation presented a special award to the man who runs the Capitol Center for his wonderful efforts to discourage drunk driving, because he has his servers wear buttons that say, "Friends don't let friends drive drunk." He has put them through training to recognize when people have had too much. Now, you know they're serving it as fast as the money can come in and they don't know who's getting it back in the stands. He also owns part of the Washington Redskins and he has

had some of his players participate in public service announcements.

I think this illustrates clearly what we've got going on in this situation. A study of road blocks and checks in Los Angeles found that drunk drivers were coming from two major places: the Los Angeles Airport and the Los Angeles Sports Arena. It is public policy that determines these things, when we allow these places to be built where we know we're going to have people that are coming and they're selling liquor. You either have to provide public transportation or you have to recognize that we really are creating the problem, and you at least ought to recognize what you're doing when you pick out a few people as a means of countering it.

Public policy has an active role in either encouraging or discouraging drunk driving. If we choose to have public policies that support and maintain drunk driving, we can continue to pretend that drunk driving is no more than a personal responsibility, and hold responsible the relatively few persons who are apprehended.

On the other hand, we can choose public policies that work with the public to discourage the combining of drinking and driving. I would maintain that this latter approach is more likely to be successful. At the present time, our society creates the conditions that have lethal consequences for our people, especially our young males. If we respond to the problem primarily by looking at the individual and dealing with him as a criminal, not only is that unfair to the individual but it's also unfair to the larger society, because it does not represent the most effective allocation of limited resources. This approach does not in any way deny that the individual has an inescapable responsibility in making the decision whether to drive after drinking, but it does say that we can do some things to remove some of the pressures on the individual to drink and drive, and make it easier for people to make the right choices.

**Question**
I understand that last summer New York passed a seat belt law. Has there been any legal challenge to that on the basis of the American constitution? Has there been any preliminary information on the effectiveness of the law?

**Dr. P. Waller**
The law will not actually be implemented till the first of the year, so there are no preliminary data. I do understand that — someone here may have more up-to-date information than I have — that there have been some questions raised about it, but I have heard nothing to date of any situation that would actually, seriously impair the intent of the law. I'm sure there will be challenges: in the States we always have challenges.

**Question**
Dr. Waller, a question dealing with state-owned liquor stores in the United States. Is there any significant difference in the incidence of drunk driving in the States, with the state-owned liquor stores, as opposed to the somewhat freer States?

**Dr. P. Waller**
If there is, I'm not aware of it. North Carolina was the second to the last state to allow purchase of liquor by the drink. We had, as some people said, liquor by the gallon instead of liquor by the drink, because you could take along your brown bag with your whole bottle, but legally it was against the law to have a partially opened bottle of liquor in the passenger compartment. So you needed to finish it before you went home, especially if you had a hatchback because you couldn't put it in the trunk.

When the law was passed it was local option, so it meant that each county and municipality could vote as to whether or not they wanted it. We have some places in the State that are dry, if you will, where you can't get liquor by the drink, and others that are wet. Those studies have shown no real differences. When you try to do cross-state comparisons, you get into a lot of problems. You would have a place like Massachusetts where you could go into any liquor store and they're private liquor stores as opposed to a place like North Carolina. But there are so many other differences between those two states. It's very, very difficult, perhaps Dr. Ross later will have some comments on this. If there are any well-controlled studies on this, I'm not aware of them: there may be.

**Question**
We are presently looking at the liquor control laws in the Province of British Columbia, and one option that is being considered is the possibility of selling beer and wine in grocery stores. I wonder if you have anything in your armamentarium that would indicate that this is a good or a bad thing? My other very short question is, that I wonder if there is any way that a copy of your speech could be forwarded to the Honorable Jim Hewitt, because I think that the information contained in your speech is something members of Cabinet should be very, very much aware of.

**Dr. P. Waller**
Well I'll save the second one to the last because it's easier

to answer. I don't have information on your first question; again Dr. Ross may have some data, may be aware of some data on that. When Mr. Hewitt got through here I sent him a little note. I said I sure am sorry you're not going to be staying for my talk. Although maybe I should have been glad, but he did give me a card, and I will send him a copy of it.

**Question**
Dr. Waller, we had a conference here in Vancouver a few years ago in which a number of presenters from the States were addressing this same problem, and a professor from Berkeley and from Harvard, and I think also from the University of Pennsylvania, seemed to be suggesting that the overwhelming literature in the States was indicating that if you increase availability, and decrease advertising, you'd have a much more positive effect on the problem. It was a surprising conclusion that came out of the conference, and I was wondering whether you were aware of that thesis and whether there's any, from your point of view, substantiation for that observation?

**Dr. P. Waller**
I would say that, from what I have seen, it seems like a reasonable way to go. I am a very strong believer in evaluation as you do these things. At this point I don't know of any conclusive proof that that's the case. But I know that the alcohol industry says their advertising really isn't aimed at getting people to increase their drinking or to start drinking if they don't drink; they're really just trying to compete among brands. Not all of us accept that entirely and in part because — I believe it was in 1973 — the breweries recognized what was happening with the demographics as the baby boom was moving through the population; they were going to be losing some ground because there was not a replacement group coming along behind. At that point they started a very active program on college campuses where at the present time, every major college campus has a number of people that are paid by the breweries to promote all sorts of beer related activities. In a place like North Carolina — since they can't hold them on the State campus — they have to hold them off campus where you have unlimited beer free of charge. You're guaranteeing that it's going to be associated with driving, because that's the only way they can get back and forth. I think if they were simply competing among brands, some of the other activities that they have undertaken would not be necessary. I think it's likely to make a difference but I'd still want to see the evidence.

# S P E A K E R

**DR. KIMBALL I. MAULL** is Chairman of the Department of Surgery at the University of Tennessee and Secretary of the American Association for Automotive Medicine. He has published more than 60 journal articles and eight books. He serves as consultant to the Tennessee Trauma Center Task Force and the Ad Hoc Committee on Medical Information Systems of the Southern Medical Association. Dr. Maull's area of interest is the relationship between alcohol abuse and trauma.

# TRAUMA CARE — THE IMPLICATIONS OF ALCOHOL ABUSE

**Speaker:** Dr. Kimball I. Maull. Professor of Surgery and Chairman. Department of Surgery. Memorial Research Center and Hospital. University of Tennessee

It is indeed a pleasure to be outside the United States. Coming in from the airport last evening, even though it was dark, I was well aware that I was no longer in the United States: there was no trash along the highway and everybody had their seat belts on.

I bring you greetings from the University of Tennessee Memorial Research Center and Hospital, which is a 600 bed facility in Knoxville, Tennessee, in the eastern part of the State. The area's characterized by a number of lakes and it is the gateway to the Smoky Mountains. Knoxville is a city of about 250,000, but serves as a referral point for a population of approximately 1.1 million.

This is my advertisement slide to get everybody's attention. Trauma means injury; but my favorite definition for trauma is that it is a sudden, unanticipated interruption in life's routine, and those of you who are involved in the field care of patients can readily recognize this. This is true for all of us who may have something trivial that we're in a hurry to accomplish. At one moment getting to our tennis match is the most important thing and at the next moment we are in the ditch worrying about whether or not we can walk again.

This is one of the problems for surgeons who deal with trauma patients because, unlike other illnesses, trauma is a sudden problem. The patients, their families, their loved ones, their friends, do not have time to adjust to suddenly having a patient critically injured and, in fact, having a life threatening problem.

Now what I'd like to do in the time that's left is to go over with you the impact of alcohol on the trauma problem in general, recite to you a few of the important pharmacological aspects of alcohol which make it such a dangerous drug in terms of creating the environment for injuries to occur, and then finally report to you on the study we completed at the Medical College of Virginia before I went to Knoxville last year.

This is the problem that we have been facing. Many physicians don't ever get to the scene of crashes; in fact, most physicians don't. They don't know a whole lot about what goes on at the scene and how important prehospital care is. That's one focus in terms of patient management that is equally as important as the care that's rendered in the hospital itself.

Now I don't know if you can read the slide, but trauma represents the pink bars and the ages are over on the left. You can see that in the early years, as alluded to by Dr. Waller, trauma is a major cause of death and disability. In fact during the vital teenage years, 75 percent of deaths are caused by trauma, more than all other causes put together.

Now this is important to the Insurance Corporation of British Columbia because this is the years of life lost, in terms of millions of dollars. Trauma exceeds cancer and heart disease put together in terms of the years lost to society. During these years we're talking about considerable expenditure, not only for the insurance companies but also for society as a whole. Lastly, this slide shows the research and prevention dollars that are put into cancer on the left, heart disease in the middle, and trauma on the right. So it is a very neglected area in terms of trauma prevention and research.

Now all of us have had tragedies that we've either known about through friends, read about in the newspaper, or — in terms of us who practice trauma surgery — have seen time and time again in our own emergency rooms.

I'm afraid the slide is out of my view, but I can describe it to you. It's about a woman who was injured by a drunk driver and spent years and years being rehabilitated and then finally got back on her feet, and was hit a second time by the drunk driver and killed. This is a very vivid example of the devastation that alcohol-related trauma has on our patient population.

Now when we speak of dosages of alcohol, I think it's important to recognize that one beer, four ounces of wine, or one ounce of 100 proof alcohol — whiskey if you will — is equally potent in terms of dosages of alcohol. So that when we talk about dosage in some of the subsequent slides, we're talking about beers or glasses of wine, as well as cocktails.

Now alcohol is not digested; it is absorbed just like water, and this is what makes cocktail parties so much fun.

because on an empty stomach virtually all of the alcohol is absorbed within 30 minutes of ingestion. This is a very important feature in terms of recognizing that the detoxication or excretion of alcohol or conversion of it occurs at a steady state regardless of the blood level of alcohol. Alcohol affects the brain six to seven times as frequently or as quickly as other tissues in the body, so consequently the early effects of alcohol are directly related to the actions of the brain. In the brain it also affects those polysynaptic pathways, which is a fancy term for those pathways which are important for the integration of information — things like thinking, judgment, reasoning, response modulation, which we'll get to in a minute.

Alcohol has a propensity to go quickly to an area where it can be most damaging, in terms of patient outcome. This was from an earlier study that compared alcohol's affects on foveal and extra-foveal recognition. Foveal recognition is akin to a threat or a hazard coming directly at the individual, and extra-foveal is from the periphery of your visual fields, akin to a young child running between two parked cars.

There is a significant delay in reaction times to both foveal and extrafoveal signals in patients who are under the influence of alcohol; but it's not only the reaction time that alcohol affects, it also affects response modulation, that is the ability of the individual to in fact respond to that threat in a very regulated manner.

In the instance of traffic safety, for example, it would lead to the more rapid application of the brakes, it would be a delayed application of the brakes but a more brisk application of them and the likelihood that the car will go out of control. So alcohol has two major deficits in terms of traffic safety. It delays reaction time, and it affects response modulation.

Down at the bottom of the slide are the number of drinks that it takes to get to a certain blood alcohol concentration. It takes about five drinks as we've already defined to reach .10 volumes percent, which is the legal limit in the United States. It takes four drinks to reach .08 which is the legal limit here in Canada. However, that's assuming that individuals are making drinks at a reasonable strength. Those of you who have been to cocktail parties recognize that, often, if the cocktail parties are given in a public place where the number of bottles of whiskey is charged to the organization throwing the cocktail party, it is more beneficial for the hotel to serve up strong drinks. In fact this happens often at cocktail parties, at least in the United States.

Now why should blood alcohol levels be drawn on all injured patients? (This is one of the conclusions that I am going to leave you with.) Well from a medical standpoint it is clearly indicated, because these are the things that alcohol does to the patient that may affect the patient's medical care. It impairs the level of consciousness; it blunts the perception of pain. If you're evaluating a patient who has been injured, the patient must be able and you must be able to make a judgment about the patient's symptoms, and then it also may result in the possibility of a misdiagnosis.

This is a case history now from the Medical College of Virginia which I think will point out how damaging alcohol can be. This was a 69 year-old, black alcoholic, who came to the Emergency Room with a headache. Shortly before he was admitted he was struck over the head with a two-by-four, which sounds like a pretty significant insult. He had a headache and posterior scalp contusion or bruising, and some clot under the scalp. He lost consciousness at the scene; his vital signs were okay; his exam was normal; and he had alcohol on his breath. The skull films did not show any fracture. He was kept in the emergency room for six hours and released after this observation with a head sheet, which is what we give patients who have head injuries; but we're not supposed to give them to the patient, because if the patient lapses into unconsciousness obviously he can't do much about it. It's supposed to be given to some responsible person who is looking in on the patient. Suffice it to say, next day he was found dead in bed, 24 hours later, with the head sheet tucked in his shirt pocket and an MCV wrist band on his wrist. These were the findings at autopsy; he had a skull fracture, and an introcerebral hematoma. His injury was attributed to being under the influence of alcohol.

Now we know that alcohol affects all types of transportation fatalities, highway crashes, and all the things that we're all very well aware of in this group, and I'm not going to dwell on these. The fatal highway injury crash rate is about 50 percent, something I want to remind you of as we look at some of the other types of trauma that alcohol has a lot to do with.

As the blood alcohol concentration rises in an individual at the scene of a crash, the likelihood of that individual being responsible also increases. Once you reach .20, it's almost 100 percent that that individual is at fault in that particular crash. This is from a study back in the early 70's on general aviation accidents, and it has been steady since that time at about 20 percent. The incidence of alcohol as a factor in general aviation accidents is about 20

percent to this day. These are not your commercial airplanes, but rather your general aviation, your private plane accidents.

Boating accidents — this example was taken from the Richmond paper back in 1980. The driver of the boat threw one of the passengers out and ran him over and killed him. The driver was cited for manslaughter and operating a boat under the influence of alcohol.

Home accidents, a little less than 25 percent association with alcohol. Falls, about 50 percent. Choking deaths, about 65 percent. Drownings, about 60 percent. Suicides, somewhere around 30-35 percent of suicides are causally related to alcohol, but the alcoholic is about 50 times more likely to commit suicide than the nonalcoholic.

Assaults and homicides. I can't come up here from the States without relating to you the fact that assaults are a major cause of trauma admissions to our hospital and other hospitals in the States. It's a combination of having a minor grievance, ready access to a lethal weapon, usually a knife or a pistol, and alcohol. Those three in combination lead to about 70 percent of assaults and burns also, a very high association with alcohol.

So then, that's not only vehicle trauma that we're talking about with regards to having a major colossal relationship to alcohol, but other forms of trauma as well. And as the age of the individual increases, those arrested at the scene for drunk driving will have an increasing percentage of alcohol at higher levels. Therefore, if we can impact the problem of the youthful offender, I think we can have a handle on preventing further alcohol-related trauma. That's an easy thing to say and obviously very difficult to produce.

I'd like to now relate to you a study that we completed at the Medical College of Virginia on the injured, alcohol-impaired drivers. It had been my impression for a number of years that if you're injured seriously enough to require hospitalization, you will in fact escape the enforcement system. I came to this conclusion partially by happenstance, because although I occasionally saw a police officer in the Emergency Room to complete the accident report, I never saw an officer on the floor of the hospital. I often wondered what happened to these individuals who came in very drunk, who were responsible for a crash that had injured them and others. We proceeded to investigate this with the hypothesis that injury protects the guilty.

We gained the cooperation of the Virginia Department of Transportation Safety, and we were able to identify the patients when they came into the hospital, because we draw blood alcohol levels on every injured patient at the Medical College of Virginia. We looked only at those patients who had a BAC of .15 or greater. We did that specifically so that we could be looking at a group which, in the psychiatric literature, has been identified in the past as being problem drinkers. We required a complete data base on this group of patients including previous traffic reports, and the report from the crash in question, as well as the data from their injuries, etc.

We had 56 injured, alcohol-impaired drivers over a period of three years. There were 47 men, nine women, and you see their age range with a mean age range of 30 years. Although we looked at .15 as the minimum BAC, most of the drivers in this group had a BAC of about .24 — .22 to .24 — so these were really heavily impaired drivers.

This slide, from a previous study, shows a pattern of driving, because we wanted to see whether or not this group was characteristic of the drinking/ driving population as a whole. As you can see, most of the offenses occurred on the weekend. When we looked at our own patients, 56 drivers, we found that they followed this curve almost to a tee. Most of the driving offenses were on Saturday and Sunday. Thirty-six percent were between 6 p.m. and midnight, and 50 percent were between midnight and 6 a.m., again very characteristic of the overall drinking/driving population as a whole.

Again this represents the number of vehicles involved, and the numbers of persons involved. As you already know, most drinking/driving related crashes involve single drivers, and single vehicles, as was clearly demonstrable from our own study. We looked at their driving records in the past and found that 16 percent of them had previous drinking while impaired convictions, a third had reckless driving, and another third had licence suspensions for crashes, and three-quarters of them had previous moving violations. We were very interested to see that 22 percent had gone through a previous alcohol safety action program in Virginia, which was greeted with very mixed emotions by our colleague out at the Virginia Department of Highway Safety. Twenty percent were driving on suspended licences, and it may be during the workshop that we can get into licence suspension as to whether it is or is not a deterrent. But 20 percent of the individuals in this group — and these are clearly problem drinkers at best — were driving their cars without a valid driver's licence. Now this will interest the police officers

in the audience. In Virginia, on the crash reports, you are supposed to put down whether or not you think the patient's been drinking: if they have been drinking, whether you think they were drinking and were impaired; whether they were drinking and not impaired; whether they had indeterminate impairment, or whether they in fact were drunk. I'm not sure how you distinguish between drunk and drinking with impairment, but 82 percent of the patients were felt by the reporting officer, to at least have been drinking. But be mindful that 18 percent, despite the fact of having a high blood alcohol level, were felt by the reporting officer not to have been drinking.

The police officer also had to make a statement as to whether or not the driver in our study was at fault in the crash. We had that information in 52 of the 56 patients. In 51 of the patients the driver who was admitted to the hospital with a high BAC was at fault in the accident.

These are the convictions among these 56 patients: two-thirds of the patients were convicted of nothing; they had no convictions at all and two drivers were convicted of manslaughter. There were six deaths caused by these 56 drivers during the course of the three year period, four patients or four individuals being killed in one crash. None of these 56 drivers was convicted of driving under the influence.

We conclude from this study that injury requiring hospitalization protects the impaired driver from appropriate enforcement measures. I have a lingering feeling that it probably is also true for individuals who are brought to the hospital, seen in the Emergency Room and released, although I don't know that. It's just kind of a gut feeling that I have. I would challenge you here in British Columbia to make the determination whether or not you're facing this same problem. Our Richmond hospital has 1,000 beds and we saw 56 patients like this over a period of three years. Clearly, if you extrapolate that to the total number of beds in the United States, you come up with a phenomenal number of problem drinkers who are injured and are put back on the streets without anything being done about it. I think it is a major problem.

You make these recommendations, one of which you've already addressed in British Columbia, and that is that blood alcohol levels are indicated and should be drawn on all injured patients. I understand that you're already doing that; it's a big step in the right direction. The implied consent laws should stipulate admissibility of hospital-drawn BAC. This is where we have a problem, certainly in the States, where the hospital-drawn BAC, as requested by the physician, is not admissible in a court of law for criminal purposes although it can be used as supportive information in a civil suit. Finally, and I think this applies to the physicians more than anyone, education is needed to enhance recognition that trauma is a manifestation of alcohol abuse.

In closing, then, I think we can state that alcohol abuse is the single most important aggravating factor in trauma, and the severity of injuries sustained therefrom. The role of alcohol and fatal vehicular crashes is well recognized, but is equally great or greater in falls, chokings, drownings, burns, and assaults. Since the problem drinker is implicated in most serious highway crashes, and since human behavior related to the use of alcohol tends to be constant across situations, persons who violate generally recognized norms of alcohol use in one context are very likely to do so in others.

The physician involved in the care of the acutely injured patient has an obligation to the patient to save life and limb, but also has an obligation to society to prevent further injury to others, and we are currently not meeting that obligation.

**Patty Manduca**
I'd like to have you field some questions from the floor before we take our break. I'd like to ask you a question because there are many, many parents in the audience. You're a parent of three children. How do you perceive that you could do something about the alcohol problem that persists in the United States? What do you do with them, what is the role, and the model that you have?

**Dr. K. Maull**
Well I think I have kind of a special circumstance because all three of my children — they're aged 11, 16, and 21 — recognize that I have an abiding interest in this particular problem, so they are all very sensitized to the issue of drinking and driving. My daughter, who is aged 21, when she was in high school, came home one day under the influence of alcohol. Obviously she did not get caught by the police, but she took the bus to school for six months whereas she had previously been driving at that time. That's one incident within the family that I would recount to you.

I think one has to behave responsibly in front of the children in terms of drinking. I am not a tee-totaller. I enjoy an evening's cocktail. But the children know that when we drink we don't drive, and that's something that we can pass along to them by example. Beyond that, I think that

each of us in our own way has to highlight this problem, and overemphasize it to our children in terms of getting them to appreciate that if you're going to drink, you don't drive.

You have someone there at the party, if you're going to be at a party, who is assigned not to drink, and that is the individual responsible for getting everybody home. That is what is prevalent in Sweden. I think it's very effective and I think that's what we really should foster in our own children here in the United States.

**Dr. Laurence Ross**
We've heard two superb presentations with a great deal of truth in both of them. And yet, I notice that they take very divergent — and I think conflicting — viewpoints as to what the drunk driving problem is. Pat Waller takes the sociological point of view, and she traces the drunk driving to a cause in terms of the circulation of alcohol and the way in which we use transportation.

Kimball Maull takes a psychological view, if you will, very much the kind of approach that Pat Waller's paper was critical of, and is in the end endorsing an improvement of the deterrence approach. I wonder if the two speakers might be willing to discuss whether they see any conflicts, as I do, and what resolution they see in their two positions?

**Dr. P. Waller**
I certainly did not mean to imply that these were mutually exclusive. You do need enforcement, you do need sanctions. Any changes that we make in the overall social environment, if you will, are not going to have an impact overnight. Even if we put a stop to television advertising, even if we took steps to modify some of the content of T.V. programming, we still have all kinds of people out there that have already been exposed to years of this. I think the two have to go together.

My own feeling is that, over the long run, modifying the context may have greater payoff, but I don't think that you can do the one to the exclusion of the other. I think, right now, perhaps what we're doing is too much of a focus on the individual without enough on the other. I think that there's been too much neglect of what some of the causal influences are, but I did not mean to substitute one for the other.

**Dr. K. Maull**
I'm going to cop out on this question a little bit, because I'm going to echo the answer that you had for the press this morning — which is amply cited and substantiated in your book — and that is increasing the certainty of apprehension I think is the key point in terms of deterrence. It's not the sanctions per se; it's the certainty that they will be applied to the individual. That if someone is going to drive drunk, they're going to in fact be caught, and they're going to be handled quickly and sternly by the courts. I think that is a major part of the issue. But the solution for the drunk driving problem is just like finding the cause for cancer: it's not going to be one thing, it's a multi-factorial problem. There have got to be a lot of hand in hand projects and programs that address the issue, in order to really impact it, I think.

**Patty Manduca**
Dr. Maull, what do you feel about having a zero BAC for the 16 year-old? The 16 year-old here in Canada can drive, but is not allowed to drink.

**Dr. K. Maull**
I think that's an excellent idea. I would push that one to the hilt, because I think that's the secret to dealing with the youthful drivers. It's not so much the youthful drivers actually, it's the inexperienced driver. If the individual doesn't get his driver's licence till he's aged thirty, he is still an inexperienced driver and subject to a lot of miscalculation in terms of his driving attributes as a function of alcohol. We know that for the youthful driver, it is at the lower BAC's that these individuals get in trouble. Consequently, the more experienced driver may drive with a higher blood alcohol — although I'm not advocating that — with less risk than a youthful driver, or an inexperienced driver with a lower BAC. So, yes, I think that no BAC should be a policy with regards to drivers who are inexperienced, and also for individuals who have been sanctioned and had their licences revoked and then get their licences back. Also, those individuals who have had previous licence revocation for alcohol-related offenses should have the same issue apply to them.

**Dr. P. Waller**
While I would agree that the evidence indicates that the inexperienced driver gets in trouble at lower levels of alcohol — and it's been pointed out that the young driver is frequently combining the inexperience of driving with the inexperience of drinking — the effort to raise the drinking age to 21 is an attempt to allow the young person to get the driving under better control, get through at least some of that learning curve for driving before they start drinking.

The only reservation I have about that is, if they really and truly don't drink then until they're 21 — and I'm not saying

anybody says that that's the case — it would mean then that they're going to be going through that learning curve for drinking in combination with driving. I think ideally what you would like to have — first of all, I think abstinence should be a completely socially-acceptable, and viable alternative which I think right now in many subcultures, at least in our society, it is not. I think there are pressures — particularly on young males — to drink and perhaps to drink excessively. I think something needs to be done about that.

On the other hand, most adults in our society drink, and most adults drive, and most of them at some time combine the two. Now the fact that we don't have zero across the board for everybody, in effect, says that we are saying it's all right for most people to drive with some alcohol in them. I don't know whether people would like to put it in those terms but, in effect, if we said it wasn't all right then we'd have zero across the board. We don't do that because most of us probably at one time or another would be criminals, if that were the case.

But I do think that, ideally — and I realize we don't live in an ideal world — you would allow those young people who choose to drink to acquire some drinking experience, independent of driving. Then, by the time they're 21 or 25 or whatever we decide, if they're going to combine the two, it will have less lethal consequences. I am a little uneasy with having them go through the learning-to-drink curve in combination with driving, even if it is at age 21.

I'm not opposed to the 21 age for drinking because I think the evidence is clear that you do reduce mortality and injury among younger drivers. And a comment that Mr. Hewitt said earlier — well, we know even with the age of 19, they're drinking younger. This is true, you're always going to have the spillover effect, but it just means that it doesn't go down quite so young. We're never going to completely solve the problem 100 percent. We can do things to modify the rates — and I think that's what we're looking for — and because the success is not 100 percent does not mean that we should just discard the countermeasure.

**Mr. Anders**
We're talking very philosophically here about things that we would like to do, and things that seem very, very appropriate among peers which believe philosophically in a very similar viewpoint. The problem — and I can echo your comments regarding drinking and young males with my sociology background, because I've done some research in that area and also have visited fraternity houses in which, actually, their status group is ranked according to how much they drink and the stories they can tell. The question that I have is: we're now existing within a social structure which is becoming more conservative, such as government off our backs. I'm wondering how you see this idealism and the ideas that we have fitting into a Reaganite social structure, or a conservative, or even a Social Credit social structure, which echos that we should have less government interference — even socially viable interference such as this — I'm just wondering if you see that as problematic?

**Dr. P. Waller**
Well, first of all, President Reagan said absolutely that the 21 drinking age was a state matter, that this was not an issue for the Federal Government to get involved in. However, eventually he did change his mind and held a press conference where he signed into law legislation that said the States will either raise the drinking age to 21 or else. I think one thing we need to recognize is that motor vehicle injuries, at least in the States, are a national problem, that the costs cross state lines. As one colleague who heads up the Spinal Cord Injury Program at the Rehabilitation Center in Chicago said, they get patients from Indiana and from other states where they don't have these Rehabilitation Centers, and they have to take care of them. You know, when they scoop somebody up off the road, they don't check which state they're from before they decide whether or not they're going to admit them for treatment. There have been some decreases in Federal funds to these places, which are placing great strains on the states where they're located, but the costs do cross state lines. If I have a North Carolina licence, but I'm injured in Virginia or Tennessee, it's the other state that's going to be providing the emergency medical care and doing these things, so I think it's a very, very limited view to think of it as being up to the local area or the state to handle these problems. I think possibly one thing that might be worth doing in the current political climate in which we operate, is to do a better job of spelling out the costs and who's paying. I think people are more willing to listen to dollars and cents right now than they are to any moralizing or philosophizing, but I think the data are there. I think it can be done.

**Dr. K. Maull**
Yes, just a comment. I think we're touching on a much bigger issue, and that is: when do individual freedoms end and social responsibility begin? In the United States we have freedom to be irresponsible, and in Canada, at least in many areas, you have freedom to be responsible, and I think you're to be commended for that.

# S P E A K E R

**DR. HERBERT SIMPSON** is Executive Director of the Traffic Injury Research Foundation of Canada and has published more than 40 reports and papers on traffic safety issues. He is the Canadian Delegate to the World Health Organization. Organization for Economic Cooperation. and Development Scientific Expert Group on Road Safety for Elderly Road Users. Other positions he holds include National Delegate. International Association for Accident and Traffic Medicine and Assistant Secretary. International Conference on Alcohol. Drugs. and Traffic Safety. He serves on the Human Factors Steering Committee for the American Association for Automotive Medicine: the Canadian Standards Association Committee on Motor Vehicle Child Seating Systems: the Traffic Section Committee of the Canada Safety Council: and the National Research Council. Transportation Research Board Task Force on Alcohol. Other Drugs and Transportation.

# TRAFFIC ISSUES — PUTTING THEM INTO PERSPECTIVE FOR CANADA

**Speaker:** Dr. Herbert Simpson, Executive Director, Traffic Injury Research Foundation

I've been asked if I would talk about issues in traffic safety, and particularly to place some of these issues in perspective. My approach will be to review some contemporary issues out of the literally thousands of issues that confront us in traffic safety. The reason for selecting only a few contemporary issues is time. Moreover, contemporary issues are the ones that you as community leaders are more likely to confront because they are high on the political and the public agenda.

There are four issues that I am going to cover. The first one has already been discussed many times: namely, the problem of traffic crashes itself. Particularly, I want to emphasize differing perspectives on the problem. You're being inundated with numbers telling you about how significant and large this problem is. Yet, the general public itself adopts a rather cavalier attitude towards crashes. I want to address the issue of why there is such a disparity in views and what we can do to overcome it. Then I want to talk about a persistent issue -- one that's been with us for a long time — the problem of young driver accidents. Then I want to talk about an emerging issue — the older driver. And finally I will discuss drinking and driving and try to illustrate that I believe it is *the* issue today. In fact, many so-called issues today are issues only because they coattail on the drinking/driving issue.

One principal objective of my presentation is to create a perspective that illustrates one simple point: there is no such thing as a traffic issue. Most of the issues we are considering are social issues and because they're social issues, they're the kinds of things that you as community leaders deal with on a day-to-day basis. You deal within a dynamic system, and when problems arise in such a system, all sorts of differing opinions also arise as to how to deal with the problem. Thus, when you identify a solution there are 101 reasons offered as to why that solution won't work, or 101 reasons why something else should be done. There's a great deal of push and pull. So it is with traffic safety issues. You quickly discover they are not just technological, safety, or health issues, but ones that have economic, political, and other profound implications.

Let me begin then by discussing the magnitude of the problem, and I'd like to give you a brief review of some of the numbers. My point again is simply to try and put in perspective the magnitude of the problem.

There are about 4,000 people killed in this country each year in road crashes, making road crashes one of the leading causes of death in Canada. In fact, it is *the* leading cause of death for people under 35, and, perhaps of greater significance, nearly half of all of the deaths to people aged 16-20 occur from road crashes. That means if you add up all of the other things — communicable diseases, fires, drownings, poisonings — that could kill young people, in total they account for one-half of the deaths: the other half arise from this single cause — road crashes.

We also have to think in terms of injuries, that is morbidity, because there are several hundred thousand people injured each year in Canada, and many of these have very long-term consequences, such as spinal injury, and brain damage. Again, these injuries are very prominent among the young and, as Dr. Waller pointed out earlier, that has considerable significance in terms of potential productive years of life lost.

As a result of that, many people have focussed on the *economic* consequences of road crashes and — depending on what factors you put into your formula, depending on the value and weight you put on each of them — you come up with different numbers. But, it can be estimated in Canada that the annual direct and indirect costs of road crashes are as much as $4 billion; maybe as great as 7½ billion dollars, each year. As enormous as this may seem, the consequences may be even greater since there are some consequences that are not normally put into this equation. For example, about two-thirds of road crash victims suffer physical after-effects, long after treatment or hospitalization is completed. Moreover, about a third of the individuals suffer rather significant psychological after-effects.

A few years ago, the importance of emotional trauma was almost disregarded as being rather trite, but we're now starting to appreciate the psychological and emotional consequences are profound, and the costs are probably incalculable. For example, how can we calculate the cost of pain, grief and suffering, and — as I mentioned

heretofore — previously this wasn't even an issue of concern. But people like Candy Lightner and the organization that she spawned called MADD and other organizations like it in the United States and Canada and people like her have certainly raised this as a critical issue for society to consider.

In summary, the problem of road crashes is enormous and the consequences are profound. But not everyone sees it that way. From the road safety point of view, we have an epidemic on our hands, and I'm sure you've read articles that put it in those terms. But we have to balance that with the perspective or view of the individual road user. If you take the total number of deaths that occur each year, and compute those as a rate per unit of miles traveled, you'll find that, in Canada, there are less than four deaths per 100 million vehicle miles traveled. That means about one death for every 25 million miles traveled. In terms of the exposure to risk that the individual is faced with, it means we're dealing with a reasonably rare event. And given that accidents, by definition, are unanticipated and unplanned, the individual road user adopts a view that "it won't happen to me"; indeed, the odds are they are correct. The overwhelming chances are that they will not die in a road crash. In any one year that may be so, but over the course of a lifetime, the likelihood of some traumatic event occurring from a road crash is fairly high. I feel that it is essential to bring these facts home to the individual citizen. We're going to have to do a fairly creative job of communicating to them the critical information to overcome the complacency they feel about this so-called rare event to impress upon them the total costs to society and the individual's chances of death or disability over a lifetime.

Now let me turn to the second issue, and that issue involves age. Let me begin with a very simple observation. We've heard a lot about young people being over-represented in road crashes, meaning they have more than their fair share of crashes; but, so do old people. Older drivers are overrepresented in road crashes. We have really defined very clearly through research, two high-risk groups: young drivers and old drivers but, it should be clear that they are at high risk for very different reasons, and, consequently we will have to look at programs that are perhaps tailored to the special reasons or factors that give rise to their over-representation.

Let's consider first the young driver and ask the question: why are they over-represented? What factors account for the over-representation of young drivers in fatal crashes? Well, I would suggest that there is considerably greater speculation than substance in the reasons that are usually given. If we polled people here and asked, "Why are young drivers at higher risk?" they would suggest reasons such as inexperience, immaturity, and attitude. From the things you've been hearing already in this conference, you can anticipate that it is probably far more complex than that. At the risk of complicating it too much, let me suggest a model which brings to bear a consideration of all the various forces and conditions that may be operative in determining the over-representation of young people in road crashes. It considers not just the skills and capabilities of the driver (how a person can drive), but the other personal/social influences as well (how a person chooses to drive). We are dealing with a perceptual motor skill that is learned — you need experience to develop that skill. Unfortunately, to gain experience you expose yourself to risk. And young people have a tendency to want to drive at night — maybe because of the availability of the vehicle — and night time driving is very high risk. But experience and exposure alone do not determine how one drives. Attitudes and beliefs are important as well. Attitudes regarding such things as compliance with the law, beliefs about immortality. We also have heard about the importance of maturity, perhaps a willingness to accept responsibility; the effect of peer pressures. And we have heard a great deal about media influences in terms of the messages that we're conveying to young people through the electronic and print media. I submit that while these are all potent forces in shaping the behavior of young people, our behavior as parents, the role models that we set, are often as powerful in determining their behavior — especially when it concerns the use of alcohol and other drugs. Moreover, there is a wide range of problems that people experience during adolescence — problems associated with family, social problems, economic problems, and problems associated with health. All of those things comprise a kind of baggage that the person takes with them into the vehicle. Driving is most certainly not just a perceptual motor task. When you drive you are in fact extending your general life style: it's time we began to recognize that the factors, forces, and conditions that operate on young drivers, as well as all of us, are far more complex than would be expected from a cursory examination of the driving task.

Recognizing that, we're coming to appreciate that it's going to require a wide range of tactics, a wide range of solutions to slowly and collectively chip away at the problem.

In order to simplify this, I have sometimes drawn the contrast between what I call the young-driver problem,

and the young problem-driver. This is an artificial distinction, but it's done to highlight what I'm saying. The young-driver problem would contend that all young people — or the majority of them — have certain problems in terms of acquiring the skills that are necessary to learn to drive. In fact, as Patricia Waller said years ago, they have a greater chance of making errors and we seem to have structured the driving world in a way to punish them, very unfairly, for making those mistakes. Sometimes the punishment is tragic and terminal. Thus, it may be that certain tactics can be developed that will benefit all, or most, young drivers.

By contrast, within the general group of young drivers, there may be some who are identified as problem-drivers. They are at high risk for very special reasons. Perhaps they exhibit other forms of problem behaviors; perhaps they happen to be the individuals that abuse alcohol and other drugs. If so, specially targeted countermeasures may be needed. The point is that no single countermeasure can be expected to solve the problem because it is complex — determined by many factors, forces, and conditions.

Now to give you an illustration of a tactic that could be considered as beneficial for all young drivers, I'd like to mention the concept of graduated licensing, which has been more affectionately termed "regulated guidance." The concept involves a step-wise introduction to full driving privileges. This concept is not new; in fact, Patricia Waller was one of the first people to describe it many years ago. The National Highway Traffic Safety Administration in the United States introduced a model of graduated licensing in the early 1970's, and demonstration projects were introduced, particularly in Maryland. What the concept involves is something like this: assume that what you're trying to accomplish is to provide people some driving experience; but, of course, if they're gaining experience, they're also being exposed to risk the moment they are on the highway. So you would like to try and maximize the opportunities to gain experience, under conditions that control the exposure to risk as much as possible.

To do this, with a graduated licensing scheme, you impose on the new driver a set of restrictions; for example, you regulate the time of day in which the person can operate, the number of passengers they can carry, the age of those passengers, the level of blood alcohol that would be permissible in such individuals, the types of highways that they operate on, and so on. Provided the person maintains an accident and violation free record, over time, those restrictions are gradually relaxed.

This is a concept that could be applicable, not just to young drivers, but to all novice drivers. It approaches it from the perspective of assuming that everyone is at equal risk to begin with, and that what is needed is a meaningful and systematic way to phase people into full driving privileges. This tactic, I believe, had much promise.

Let me now turn to the other end of the age continuum and consider the question of the older driver. This is a current problem in the sense that older drivers are over-represented in road crashes. The reason it doesn't come to public attention very much is simple: there are not that many older drivers. In other words, they do not drive very frequently; but when they do, they're at high risk of fatal crash. Why is it an emerging issue? There are several reasons. First, as probably you know, we're an aging society. That group of society called the baby boomers is gradually aging. By the year 2000, a very large portion of our population will be over the age of 65. The trends are already obvious. If you look at all licenced drivers, and ask what portion of them are over 65, you will find that the proportion has been increasing every year steadily for the last 20 years. Second, if you ask another question: among 65 year olds, what portion of them have a licence, are retaining their licence, or getting a licence, you find that proportion has also been increasing steadily over time. So what we have then is more people over 65, who are retaining their licence — and there's going to be more of them — combined with the fact that their risk of collision is higher. Given these trends you see that we may have an emerging problem.

It is for this reason that many countries got together, through a joint committee of the Organization for Economic Cooperation and Development and the World Health Organization, to look at this emerging problem and try to identify countermeasure tactics and strategies — in advance of it becoming an issue — because, as you know the usual procedure is to be reactive rather than proactive.

Now let me turn my attention to the last issue, which, I suggested in the introduction, is *the* issue — the issue of alcohol and traffic accidents. This problem has been around for years, and has already been and will be the subject of considerable discussion at this Conference. I will make only a few remarks about it, because there will be a special opportunity to pursue this issue in many of the working groups, and it will be touched upon by other

speakers. What I want to do is illustrate very briefly the *context* in which drinking and driving emerges. This is a subject that Alan Donelson will be addressing tomorrow.

To indicate why the problem has been so resistant to change, let's start with certain facts. We are a *society of drivers*. There are 12 million licensed drivers in this country, and we drive about 130 billion miles each year. We are also a *society of drinkers*, who consume in Canada each year about 205 million liters of alcohol; that's 45 million gallons. If you consider the circumstances under which we consume alcoholic beverages, and the frequency with which we rely on the private automobile as a mode of transportation, it shouldn't surprise you that we are also a *society of drinking drivers*. I think to assume anything else would be naive. In fact there are about five million people in this country who would admit to having driven after drinking, at least occasionally, in the past year. There are about 175,000 people charged with drunk driving offenses each year in this country, and we estimate that somewhere between 50 and 100 million drunk driving trips are taken each year.

This act of drinking and driving has been viewed by many in the past as a simple act with a simple solution. But we are beginning to appreciate that it is remarkably more complex than that. In fact, the persistence of the alcohol crash problem over time, in the presence of major efforts — I mean this is not the first time people have looked at this problem — suggests that simple solutions may be illusory.

The problem has been sustained; in fact, the key to separating drinking and driving has proven to be very elusive. The reasons for this are manifold, but of central importance in what I am saying is the *conceptualization* of the problem itself. It isn't simple, despite the fact that it merely involves the overlap of two behaviors, driving and drinking. It isn't simple, because the behaviors in question are pervasive and socially ingrained, as attested to by the fact that enormous multi-billion dollar enterprises have been created to provide for the drinking and driving needs of our society. Complex legal and regulatory mechanisms and agencies have been established, both on the transportation side and on the alcoholic beverage side, which cover everything from the manufacture, distribution and sale, to the use of the products by individual members in society.

It isn't surprising, therefore, that the joint occurrence of driving and drinking go beyond matters of individual behavior and responsibility, to touch the very structure of society and social practices, and involve the often conflicting matters of economy, morality, justice, health, and safety. It is a social issue — the stakeholders are many. Today, this rather broad perspective is reflected in the wide range of solutions that are being suggested for the alcohol crash problem. Any intervention point in the complex control systems that are associated with driving, or with drinking, are considered appropriate for change, since they may have a bearing on the alcohol crash problem. This is what I mean by people coattailing on the drinking/driving issue. In other words, if you have a hobby horse, the way you make the hobby horse significant is to say it can impact the drinking/ driving problem.

Indeed, virtually everything seems to be fair game today. For example, if protection devices, such as seat belts and air cushions, reduce injury to occupants, then they will have an effect on the alcohol-crash problem, because fewer drunks and their passengers — or the occupants of vehicles that they strike — will be killed or seriously injured. The losses from drunk driving will therefore be reduced. But the same argument could be made for improving road signs, for setting stricter criteria for licensing, for eliminating roadside hazards, raising the height of tail lights, improving the quality of emergency medical care, and upgrading the hundred or so other factors that will reduce the likelihood of crashes, or of injuries in the event of a crash.

Similarly, if eliminating or restricting the advertising of alcoholic beverages reduces the number of people who drink, or the amount they drink, or the circumstances and conditions under which they drink, this will reduce the amount of drinking and driving — we assume — and thereby impact the alcohol crash problem — we assume. The same argument can be advanced for a multitude of other alcohol-control policies that have been suggested: the age of purchase, taxation, distribution, and dispensing.

Of some interest, many of the driving-control and the drinking-control policies or tactics that are being suggested today have been known for years, and in some cases tried. They are, however, re-emerging in the context of the alcohol crash problem.

As a consequence, a shortage of potential solutions isn't the problem. The problem — at least for policymakers, or for people like yourselves, who have to allocate the resources and choose among the alternatives — is deciding which are the most needed. Unfortunately we haven't produced as yet, a handy guidebook. What this

means simply is that drinking and driving is not just a traffic issue. it's a social issue.

Consider these other social issues: vandalism. under-age drinking. assault. teenage pregnancy. drug abuse. and shoplifting. These are all social issues. and they're all very complex. How important are each of them? If you as a member in your community had to decide how to rank-order or prioritize these in order to take action on them. how would you rate them. and where would you put drinking and driving among them? What are the causes of those behaviors? Considerable amount of debate. opinion. sometimes confrontation. and less frequently dialogue surrounds each of them. What are the cures and the remedies? They are equally problematic. So what we're faced with are different views. different perspectives. different emotions. and different levels of commitment. And. to illustrate the problem further we can raise the stakes a little by considering some other social issues that have vaulted into public prominence in Canada in the past few years — abortion. marijuana. pornography. drinking and driving — and since we are in Vancouver. I should have included prostitution. because that has become a social issue as well.

Such issues are characterized by debate. by dialogue sometimes. by concern. commitment. and certainly differences of opinion. Therefore. we must appreciate that in dealing with a social issue. we're dealing with a dynamic system where not everybody holds hands and marches forward in unison to defeat the foe. There are many different stake holders. many different attitudes and opinions towards the issues and. frequently. the scientific evidence is the last to be brought to bear. It's more a matter of emotion. or a matter of feelings and opinions. So as we move towards resolution. we have to recognize that it's going to take time. It's not going to be something for which there is a simple. single solution. A wide range of tactics and countermeasures. and control programs will have to be considered.

What that says. simply. is that. given the nature and complexity of these kinds of problems. we must recognize the need for longer range approaches. We can't simply commit ourselves for five or 10 minutes to try and deal with it. These approaches will have to emphasize social and behavioral aspects as well. because the problem arises as a result of the social context. So if we recognize that — the context in which it emerges and is sustained — I think we will be more successful. at least more realistic. in terms of our expectations.

Consequently. there is a potent role that can be played by each of us. at the individual level. or at the grassroots level. And this kind of approach. I think you will agree. is very obvious. especially in the work of the Traffic Safety Education Department of the Insurance Corporation of British Columbia. What this message also says is that. while legislation and regulation can help shape public attitudes. norms and customs. it is equally if not more true that public attitudes. opinions. and customs shape legislation and regulation. It's all well and good to consider introducing very severe punishment. but the experience with such treatment in dealing with drinking and driving has been that the severe punishments are often not imposed. Why? Because the judicial system is not there to set the moral standards of the community. but to reflect them. What we have to do. therefore. is work on the standards within the community. the level to which we regard certain behaviors as acceptable or unacceptable.

What we should strive for then is slow. but steady. progress. I think it's rather interesting. that 10 years ago when I first entered this field. if somebody had told me that today I'd be at a meeting of community leaders dealing with a variety of traffic issues. and that hundreds of representatives would be here. I think that would have been considered naive and unduly optimistic. Ten years ago. if I had told people that I was going to be at a conference today dealing with community leaders — which. in fact. was the second such conference — I'd have been considered totally unrealistic. Moreover. if I had told people 10 years ago that I would be attending a conference of community leaders. where many of them have instituted programs in their own communities. that would have been regarded as an outlandish expectation. But it has happened — progress has been made.

The challenge now is to keep things moving. In this respect. I would echo the comments of others. One of the ways in which efforts to move forward can be continued is through the individual initiatives that you can take: the role you can play and the things that you can do. in setting the standards as a community leader.

# S P E A K E R

**MR. KENNETH HINTON** is a member of the Spring Tour Group, which tours British Columbia schools to promote physical fitness and positive mental attitude. All members of this tour group originated with the British Columbia Wheelchair Sports Association. In April 1976, while working on the Landsdowne Shopping Centre construction site, Ken suffered a fall, which broke his back and rendered him paraplegic. After one year at the G.F. Strong Rehabilitation Centre, Ken was introduced to wheelchair sports and became one of Canada's first handicapped scuba divers and sky divers. He serves on the Board of Directors for Canadian Wheelchair Sports, is President of the Hinton Brown Foundation, which raises funds for spinal cord research, and is Vice-President of Access to Nature, an association which promotes outdoor programs for physically handicapped people.

# CANADIAN WHEELCHAIR SPORTS ASSOCIATION

**Speaker:** Mr. Kenneth Hinton

During the Conference it should be noted that most of the speakers mentioned our youth. The prime objective of the Spring Tour is youth and their development in today's society. The inception of the Wheelchair Athletes Spring Tour began six years ago. The original Tour was to seek out wheelchair users, isolated in communities throughout the Province. We wanted to show them — and the people of their community — what opportunities lie in sports, and in life, for a wheelchair user.

After three successful Spring Tours, the overall theme slowly had to change and grow. The firm decision was made by our group to stress the prevention of traumatic injuries. The horrors of drinking and driving, especially amongst the British Columbia teenagers and young adults, was the most prevalent and growing problem. With these new priorities, we set up the Tour to begin before high school graduation, yet not too late into the preparation of the celebration to ensure that our message was seen and heard, loud and clear.

The Tour begins the weekend in May and continues for about two weeks — two weeks because our budget is very limited. Our Tour group agrees on a predestinated tour seven months prior to departure, then our coach coordinates the tour. Our wheelchair athletes donate sports equipment, vehicles, and their time. We usually visit six to eight cities and communities, reaching 10-12,000 students and teachers per tour. These figures do not include people reached through local media, newspapers, and television, who also help communicate our message.

In each community we visit three to six schools per day; we demonstrate a variety of sports played by wheelchair users. Our Tour group will challenge the school teachers, or teams, in volleyball and then we put them in wheelchairs and have a little game of basketball. Following the demonstration we try to answer each and every question a student may have about life in a wheelchair.

One of the major topics that we have — over and above drinking and driving — is that we try to stress a positive mental attitude about oneself, and others, about believing in one's own ability, hard work, and dedication to a goal, so that each of them will achieve their own personal best. This portion of the message is vital in assisting all students to start believing in themselves enough to make their own choices about their future: i.e., not drinking and driving or getting into the car of a drunk driver.

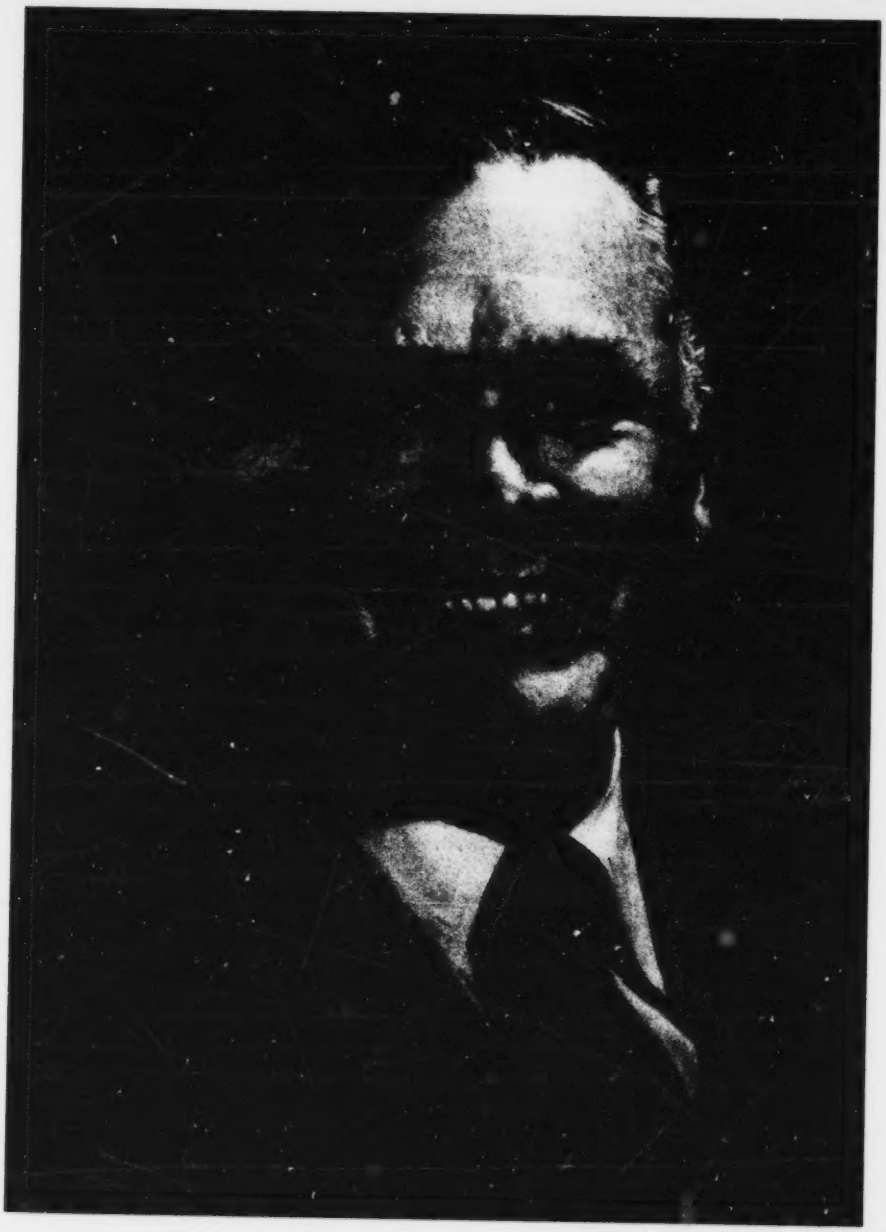
During our visit the students can touch a drinking driver victim, one of our wheelchair athletes. This is a real problem sitting in front of them: a person who is permanently disabled, either struck down by a drunk driver, or who was a driver who thought he or she could drink and still drive. Our audience can see and talk to a paralyzed victim who was a passenger of a drunk driver. We ask our audience to imagine that they live with the knowledge that they did this to a human being, because they were drinking and stupidly drove. How would you feel if you injured a person in this such manner?

Our Tour group members are sincerely concerned with, and feel bound to assist in, the quest of declining statistics in drinking/driving tragedies, particularly amongst our youth. There's an old adage that says "you can't teach old dogs new tricks." Well, that's not true: you can teach old dogs new tricks, it takes longer. Therefore, we stress the youth. If you want to refer to puppies — if you teach puppies tricks while they're puppies, the tricks remain. If you teach children, and they learn those tricks when they're children, hopefully the knowledge that you've imparted will stay with them.

Our Tour is mainly concerned with direct communication with the people of British Columbia. We do not just talk at our audiences, we demonstrate our sports for them. We involve their peers, and their teachers in our sports, and we talk with them and to them. We answer their questions and show them that we do care: we want to see them happy, healthy, and walking. Should our endeavors save just one life, our mission was not in vain. We sincerely hope that with the approval of this short film our Tour will continue, and the contents and message will hopefully save lives. Should any of you be interested in wanting to know more about this after the film, I'd be more than happy to answer any questions.

# SPEAKER

**THE HONORABLE GARDE GARDOM** is M.L.A. for Vancouver-Point Grey. He received his B.A. and L.L.B. from the University of British Columbia. He was first elected to the legislature in 1966. In 1975 he was appointed Attorney General of the province. He became Minister of Intergovernmental Relations in 1979.



# THE COUNTERATTACK PROGRAM

**Speaker:** The Honorable Garde Gardom, Q.C., Minister of Intergovernmental Affairs

Firstly, I would very much like to congratulate Ms. Patty Manduca for her usual superb efficiencies and effectiveness, and to all connected and associated with this Conference. You have produced an excellent agenda from which I'm sure first class benefit will result.

Let me commence by saying that the stupid, pointless, needless, crazy criminal activity that in a moment can turn a highway into a battlefield or an abattoir has appalled me, as an interested citizen, as a private practitioner, and as an elected representative, and for years!

When I became Attorney General for this Province, I was determined to do something additional to assist to prevent that which was becoming responsible for more and more deaths, injuries, property damage, and tragedies each and every day of each and every month and each and every year.

So, in 1977, I launched CounterAttack. It took some scrounging, because money then — as it is today — was not readily available, even though we felt money spent would be money saved. But thanks to the Insurance Corporation of British Columbia and Attorney General funds, seed dollars were allocated, we got it started. CounterAttack came into being, highlighted by the BATmobiles together with excellent media cooperation and coverage.

Returning to the dollars, I'd like to make the observation that the success that we are all trying to realize, in my view, can't be bought. Money is definitely an element, but more important is involvement. At this juncture I'd like to thank all of those who participated, who became involved, and for the great effort expended by Mr. Ron Boyle.

Next I formed the Motor Vehicle Task Force, whose task was to review all of our driving laws.

Those two initiatives started to enable us in British Columbia to make better headway against bad driving and against the crime of drinking and driving. I am told that at one point CounterAttack was considered to be the best program of its kind in North America. The Motor Vehicle Task Force was extremely comprehensive, and they both involved the general public. Public acceptability, public awareness, and eventually varying degrees of attitudinal change developed.

But there had to be new initiatives to maintain the momentum and indeed to increase it, which serves not only to encourage those who are involved in the process but also to promote new recruits that I would say will always be a continuing necessity.

Next we developed a series of additional measures which were recommended to me. The videotaping of drunk drivers on a pilot project basis, the blood testing of drunk drivers was voluntary and later on became statutory. The year-round Province-wide road checks, the "bear in the air" program of the R.C.M.P., their helicopter surveillance of certain major highways, seat belt legislation, plus holiday season and high school graduation anti-drinking driving exercises.

Since that point in time, even more promising and encouraging steps have been taken. I would certainly commend the Insurance Corporation for its Traffic Safety Education Program with its seven components of school, health, police, workplace, community projects, special projects, and research. I am informed that it is ongoing and developing good results — that is a great compliment to everyone who has been involved in that.

What I wish to continue to stress it that the more people in every walk of life who are concerned about, and are prepared to help, in attempting to bring about these attitudinal changes, and to stamp out drinking/driving, the better.

You all have heard the figures and they're rather little comfort to anybody. We know that the cost to our British Columbia taxpayers of alcohol-related roadway deaths is in excess of about $160 million a year: that being the insurance, health, and criminal justice cost which as you know skips the enormous social cost of the lost bread winner, the scientific minds snuffed out, the tears and the tragedies, the heartache, the orphaned children, and the lessening of the quality of life. It's of little if indeed any comfort to anyone who has suffered such tragedies to know that this carnage is being reduced, but I'm informed that our statistics in this province show that, since CounterAttack has been in operation, the number of alcohol-related automobile accidents has been on the decline. That's good. But getting back to the main points, public-awareness, public-education,

risk of apprehension and appropriate penalties for those who are convicted of impaired driving are the routes that we do know will help to improve these very, very horrible statistics.

So I'd say it's very much really a carrot and a stick approach: appeal, educate, and inform, on the one hand, and really knock the hell out of the defaulters, on the other — provided the ground rules are known, the tolerance levels, the law, the penalties, and all of the consequences. That approach is best developed by programs, policies, and initiatives that complement one another as opposed to compete with one another, because we're all really looking at the same problem, we're all really looking at the same market for help — the professionals and the volunteers — and I must say it's extremely encouraging to see the tremendous number of professionals who are also volunteers. No doubt a raft of suggestions will be coming from this conference and I would be very appreciative if you could let me know what they are at the termination of your conference. There is still an awful lot to be done.

Now, I would like to ventilate a few personal views. These are my own views and I'll leave them with you for your consideration if you think any of them require more in-depth study. No doubt, some of them may be discussed during your deliberations over the next couple of days.

I think the videotaping aspect is a very, very important one. I say it should be expanded nation-wide and province-wide.

I think we have to continue to look at sanctions and, indeed, different sanctions. I've always felt that the fine is a poor yardstick and, to an extent, so are suspensions. They are one thing for a truck driver, and another thing for a cosmopolitan stock broker. Why not consider some type of social agency custody, some type of volunteerism, morgue or emergency work for all offenders? Also, let's press for better monitoring and more publicity about sentences of offenders, plus more concern about the victim and a greater voice for the victim in the process.

Next, I'd urge that we have greater participation at the top level by business, and greater participation at the top level by labor, more holiday initiatives. Most of all keep up the momentum in the schools, and I'd say there with more first hand accounts from the police, from the doctors, from the lawyers, from the coroners, from the judges and from the living victims as well.

Now, apart from a vocational interest in involvement, it's very tragic, but it's true — in so many cases the motivation for volunteerism comes from those people who have either peripherally or directly experienced some definitive loss. Our job is to appeal to people before the fact, not only after the fact. Also, we have to emphasize that we're not looking at this from the perspective of a monopoly on ideas. This cause is not a closed shop: it's not insiders only. It's apolitical, and I stress that very strongly. The appeal is to everyone, and it's open to everyone to help for what I call ACE — Awareness, Concern, and Effort — to alert, to influence and assist those who aren't aware, aren't concerned, or aren't prepared to give of their effort.

Finally, developing the interest and the awareness is one thing but, as I've indicated in my remarks, keeping it up is another. The approach cannot be dull, it has to be profiled, there will always be a need for new ideas, new thrusts, and new emphasis. All of you cannot be commended enough for your participation, and for your work.

I leave you with my commitment: as long as I'm about, elected or otherwise, I will continue to work for education, apprehension, and enforcement measures that will assist to rid all of us from this mindless and criminal activity of booze behind the wheel.

Good luck with your deliberations.

# S P E A K E R

DR. LEONARD EVANS is Senior Staff Research Scientist with the Transportation Research Department of General Motors. In 1984, he was awarded the J.M. Campbell Award for Scientific Achievement. He served as Co-Chairman of the International Symposium on Human Behavior and Traffic Safety and delivered the keynote address to the Second International Conference on Traffic, Energy, and Emissions in Melbourne, Australia. He is a member of the Society of Automotive Engineers, S.A.E. Human Factors Committee, and the Human Factors Society.

# DRIVER BEHAVIOR AS REVEALED IN RELATIONS INVOLVING CAR MASS

**Speaker**: Dr. Leonard Evans, Senior Staff Research Scientist, General Motors Research Laboratories

I did not come here directly from my home in Michigan. yesterday morning I had a business commitment in Southern Florida. One of the advantages of that 10 or so hour trip was that I did have an opportunity to review, in some detail, the material sent me. I was deeply impressed by the work that has been done here in British Columbia, the quality of the data that have been collected, the 80% CLICKS! program. When I get back home, I am very much looking forward to sharing this with colleagues. Really, British Columbia has been leading the way, and we have much to learn. The United States is still well behind in such matters as seat belt use.

As I mentioned, I arrived here by a rather circuitous route. I also arrived at doing traffic safety research by a rather circuitous route. My professional background is in physics, as you might perhaps have guessed from the talk's title. In many ways the position of a traffic safety researcher is more akin to that of an astronomer than that of a physicist, because both are faced with trying to extract information from a system that is essentially given. Traffic Safety Researchers do not have the luxury of the physicist in varying one quantity, keeping all the others fixed, and seeing what happens. They have to deal, essentially, with changes in the system that happen outside their control.

There are two main ways that a scientist may extract information from the traffic safety system: one is looking at traffic accident data and the other is directly observing the system. Now, I've been involved in some score or so of investigations using one or the other of these techniques, and this afternoon I want to tell you with a very broad brush the summary results of about a dozen of them.

All dozen focus on the relationship between car safety and car size, that is between traffic safety and car size. In all cases, we are going to characterize car size by car mass as indicated by the objectively determined physical characteristic, the curb mass of the car. When we find relationships between safety and car mass, that does not imply a causal relationship between them: it just means they are related.

You might wonder why there is such an intense interest in this relationship between car size and safety. Well, interest goes well beyond the question of how having smaller cars will affect traffic safety, and of course we are getting smaller cars in the United States in response to the lesser availability of energy. The reason for the intense interest goes beyond that question, important as that question is. It is in some ways analogous to the reason that a paleontologist studies fossils. He doesn't do it just to increase the number of facts he knows about fossils or just to increase the information about fossils, but with a broader goal of getting a broader understanding of our whole planet and all the creatures in it, including ourselves.

In a somewhat similar way, I hope to show you that relations with car size offer some fairly broad insights into the way human beings are behaving in that overall complex traffic system. I'm mainly going to use field accident data to answer three questions. Firstly, given that there's a crash, how does the probability that the driver is killed depend on the mass of the car? Secondly, how does the probability that a crash occurs depend on the mass of the car? And thirdly, given the number of driver fatalities per registered car, how does that quantity depend on the mass of the car? We'll see that these answers are intertwined in ways that tell us something about driver behavior.

We are going to focus mainly on fatal crashes. The reason for this is we have really excellent data on fatal crashes, whereas data on other types of crashes is always characterized by a lot of uncertainty. We are going to focus also in this presentation primarily on single car crashes. One reason is that, if we are looking at car size, we want to have only one car to worry about. We've done work on two car crashes but, clearly, the equations and the bookkeeping get more difficult because you have to worry about the size of each car involved. Another reason is that in the United States the most common way for a driver to be killed is in a crash into a fixed object, the most typical example of which is a tree — it is not a crash into another car but a crash into a fixed object. Now, I guess the reason this happens is that there still seems to be a lot more trees out there than there are cars, and I suspect that is particularly so in British Columbia.

The question that always arises in traffic safety research is the question of exposure. We usually have very good data on the number of people killed or injured but we do not know the number that were at risk. Relative to the three

questions I'm going to address. I use fairly conventional exposure data in the latter two, but in the first one I use a rather unusual exposure approach. Here again — if I can concentrate on the example of cars hitting trees — from a data file maintained by the United States Federal Government, we have excellent data giving detailed information on the number of drivers who are killed in crashes hitting trees. What we do not know is how many cars crash into trees, in which the driver was not killed. We don't have a measure of exposure, so what we do is use a surrogate for car/tree crashes and that is car/pedestrian crashes.

We assume that one is proportional to the other, and a car/pedestrian crash is in the data file provided the pedestrian is fatally injured. In terms of looking at effects of car size, we make the further assumption that when a car hits a pedestrian, the probability that the pedestrian is killed is independent to the size of the car. On physical grounds this is an eminently reasonable assumption because the smallest car is much heavier than the heaviest pedestrian. The kinametics of the crash are relatively unaffected by what happens during the crash. Therefore, the number of drivers killed divided by the number of pedestrians killed is proportional to the probability that the driver is killed given a crash.

I'm going to quickly flip to the slide that shows this ratio of driver fatalities to pedestrian fatalities as a function of car size. What you notice is a fairly clean, systematic relationship showing that the probability that the driver is killed given a crash, is larger in the smaller car. But note the data refer only to drivers in the 16-24 age category. The reason we must disaggregate our data by driver age is — if there is one thing we really know in traffic safety — drivers in that age category are about 400 percent more likely to kill themselves than are more mature drivers. Therefore, if you do not extract the potential confining effects due to driver age, you invite coming to possibly erroneous conclusions.

This ratio is interpreted to give the physical effect of car size, given a crash. In the next slide we show the same information for drivers in 25-34 age category and what you notice is that the picture is both qualitatively and quantitatively essentially the same. This confirms the interpretation that this is essentially a physical measure of the probability of a fatality, given a crash — essentially independent of driver behavior. Now, if one group of drivers behaves in a more careless way, more of those drivers will be killed, but they will also kill pedestrians in similarly increased proportion.

The third slide shows the same information for yet another group of drivers and, again, it is essentially the same picture. Here, the numerator is driver fatalities in hitting fixed objects. We can look at car drivers killed in a different type of crash, that is, a crash into a large truck. If we computed the same ratio for those crashes, we would end up with six pictures — instead of the three I have shown you. We could, with the same philosophy, use motorcyclists that are killed in crashes with cars. So we can generate a total of twelve graphs that have the same form as the three shown.

In all cases we get a picture that looks essentially the same as the one shown, so the appropriate thing to do is to take an average of all 12 and summarize them by a rather simple mathematical equation, which is shown on the top. Now, even simpler than a mathematical equation, is to concentrate on a specific example. I'm going to use the same example in all the comparisons and that is to compare the case for a 900 kg car to the case for an 1,800 kg car. In the General Motors product line, a Chevrolet Chevette is about 900 kg and a Cadillac deVille is about 1,800 kg. When we plug in those two values to the equation, we find that — given a single car crash — the driver in the smaller car is about 2.6 times as likely to be killed as is the driver in the larger car. So you see this answers our first question. Given a crash, the driver in the smaller car is 2.6 times as likely to be killed.

We now ask our second question: "What is the probability of a crash as a function of car size?" Here, we're going to use police-reported crashes. Most of these crashes tend to be two car, because they are just far more numerous than single car, so here we're looking at crashes that are to a large extent minor. We are going to use data from the state of North Carolina because North Carolina has a vehicle inspection program. Each year, a vehicle has to present for inspection; part of that inspection is an odometer reading. By subtracting consecutive odometer readings, we can estimate the annual distance of travel of the car. We can, therefore, look at police-reported accidents per unit distance of travel. In the figure here, this is shown as a function of car mass with the data disaggregated into three different age groups. Notice, for all three, there is a systematic trend for the accident involvement rate to be larger as the car gets larger. Also, you will see from that one curve the enormous effects of age that have been referred to so often.

At some presentations there's been some question raised about whether it's experience or age and, of course, it's very difficult to separate the two effects. I tend to think of it as an age effect that has very much to do with growing up rather than with the amount of learned knowledge, but

it's not possible to extract that definitively just from the data. What we are seeing is, in three cases out of three, the larger cars are involved in more crashes than the smaller ones when driven by drivers of the same age.

North Carolina isn't the only source of data. We also have data from the state of New York and, here again, we're looking at the number of policereported crashes per registered car. Just to get it conveniently on one figure, it's all been rescaled so that the value "one" is the value that corresponds to an 1,800 kg car. Again, for three different age categories, we find increasing accident involvement rate with increasing car size. We also have some data from our own state, Michigan, and again it's disaggregated into three different age categories — a little bit noisier than the others, but still the accident involvement rate increases as the car size increases. So we've had a total of nine cases from three different states, each with three different age groups and — nine cases out of nine — the accident involvement rate increased with increasing car size.

I should stress it is necessary to disaggregate these data by age because, if you do not, in all cases the effect is different. This occurs because young people with their enormously higher accident involvement rates tend to choose smaller cars. If you just look at it without disaggregating by age, you come up with an answer that is somewhat deceptive because it's really just reflecting that younger people tend to choose smaller cars.

As before, we can summarize all the results in this equation or again focus on the example. What we're finding is that, on average, the smaller car is involved in about 72 percent as many crashes as the larger car. Or, expressed differently, the smaller car is involved in 28 percent fewer crashes. Now this comes as a surprise to many people because, if you think of such physical factors as stability, a tendency to overturn, and things of this sort, they all seem to go the other way. You would expect the larger car to be safer, all other factors being equal. But I believe what this result was telling us is that all other factors are not equal; that the small car is being driven differently than is the large car.

We have direct observational evidence that pertains to this. In a series of experiments, my colleague Dr. Paul Wasielewski and I, who have collaborated on a number of these studies, actually looked at traffic with a photographic technique. We photographed every car in sequence, using a camera with a 250 exposure magazine.

This slide gives a broad view of the site. If you have fantastic vision, you may even recognize the site: it's the Queen Elizabeth Way in Toronto. This is the camera, we have a chart recorder noting the time each picture was taken and another general picture of the equipment. Since we had an interest in seat belt use, we collected data in Ontario as well as in Michigan.

The results of these observations are summarized here if we look at speed as a function of car size — we got the car size from the license plate of the cars in Michigan — and you look at speed as a function of car mass, we find a systematically increasing speed as the cars get larger. If we look at what is labeled reciprocal headway — it's really just the headway — but if you take one over it, then the higher risk the person is taking, the larger is the quantity. Again, we find for all age groups the larger the car, the greater is the risk-taking as indicated by close following. Finally, we have the variable seat belt non-use. It's turned upside down again, so that the bigger value corresponds to higher risk-taking. We find seat belt non-use is higher in larger than in smaller cars. That's an observation many people have made. It seems very robust finding that you get a greater tendency to use seat belts with smaller cars.

Each of these three observational results are all telling the same story: namely, that higher risk taking is associated with larger cars. This offers an explanation for why the larger cars are involved, as we're finding, in 28 percent more crashes.

Now if I can return to the main theme, we answered the first question, that is: given a crash, the probability of a driver fatality is 2.6 times in the small car what it is in the large car. If we're comparing the 900 kg to the 1,800 kg car, we get a 2.6 factor for the probability of a driver fatality, given a crash. The other study showed that the probability of crash was .72 times as great in the small car as in the large car. So, based on these two studies, if one wants to estimate the number of driver fatalities per small car compared to per large car, you just multiply the two quantities together and you estimate that you expect roughly 1.9 times as many driver fatalities per car in the small as in the large car. Now it turns out that was the very first study I did in this area, looking at that question directly.

Here, we're looking at the number of fatalities per registered car, again disaggregated into three different age groups and going through the same procedure as before. Taking the average value, we find that the 900 kg car gives 1.7 times as many driver fatalities as the 1,800 kg car. In other words, we're getting agreement that is really better than we've any reasonable right to expect in a system as noisy and complex as this, so there's a sort of coherence in the

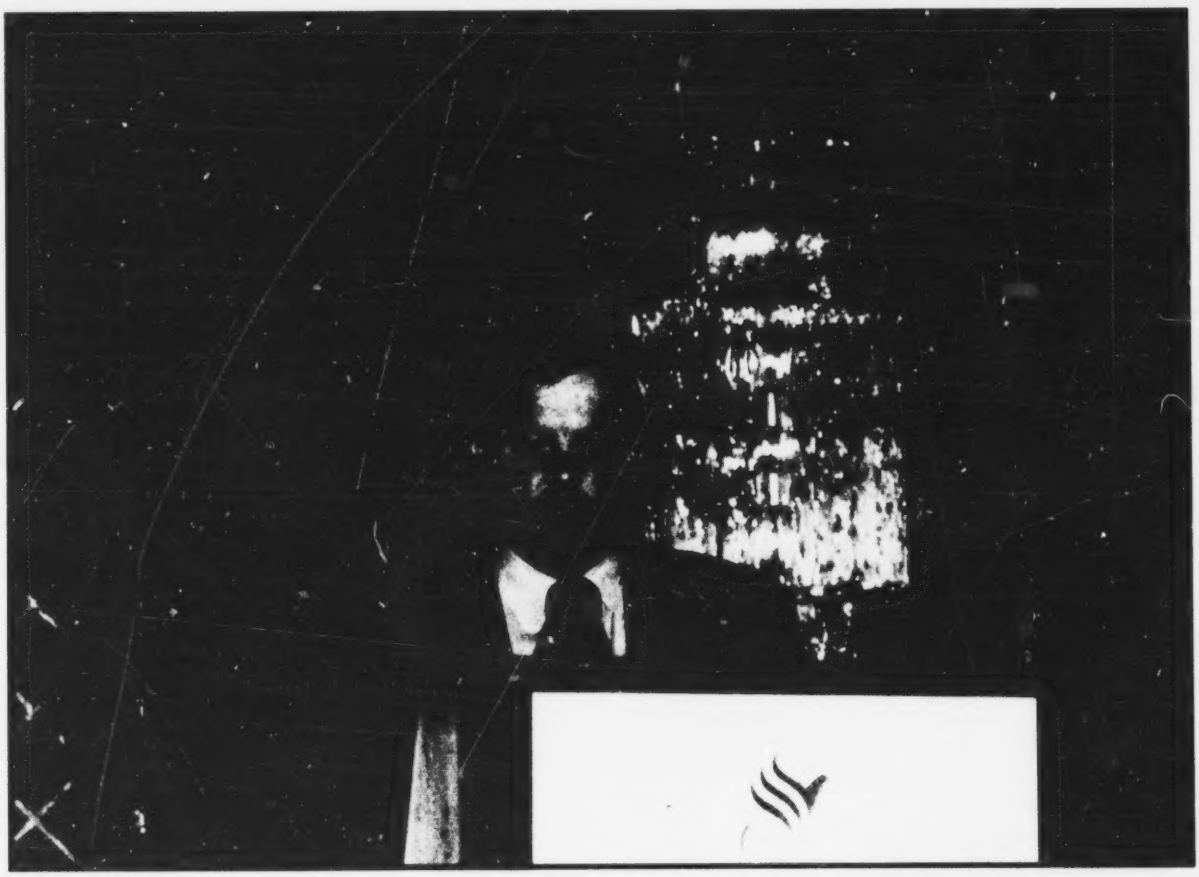
overall picture we're finding. In conclusion, we are finding that the answers we have obtained to these three independent questions provide a rather consistent overall picture.

The reduction in accidents in a small car is really a very large effect. I think all of us here are aware of what we have to do to get a 28 percent reduction in any type of accident involvement. I use the term "driver behavior feedback" to describe the process that's occurring here and, in fact, I have another paper that will be presented to the Transportation Research Board on January 14 that goes into this in more detail; the information presented here being one of many examples -- examples of ways in which human beings react to changes that are made in traffic systems.

The overall study really underlines the critical role of driver behavior and the interactive characteristics of the whole system. As we change the system in general, the users do not necessarily ignore the change — especially if it's a change that they can perceive.

# S P E A K E R

**THE HONORABLE BRIAN SMITH** is Attorney General. He is M.L.A. for Oak Bay-Gordon Head. Smith served as Mayor of Oak Bay from 1974 to 1979 when he was appointed to Cabinet as Minister of Education. In 1982, he was appointed Minister of Energy, Mines and Petroleum Resources, and in 1983, he become Attorney General. Smith lectures part-time on criminal law at the University of Victoria.



# THE DRINKING/DRIVING PROBLEM IN BRITISH COLUMBIA

**Speaker**: The Honorable Brian Smith, Q.C., Attorney General, Province of British Columbia

The vexing problem is how to get drinking drivers off the road. I've had this job for a year and a half and, if I had the answer to that, I could eradicate that which is now the major criminal activity in British Columbia.

People who take too many drinks and then get behind the wheel of a car have been responsible for 1,600 deaths and 47,000 injuries in the last seven years. In 1982 their criminal activity resulted in some 10 million dollars in insurance claims. In 1983 there were almost 25,600 drinking/driving offences reported — that's just reported — and 21,000 charges laid under the Criminal Code. It cost the justice system 23 million dollars alone — and that is just direct cost — not the cost to people who are involved in the deaths and injuries, who never recoup their losses or their misery in court. But how do we stop it, how do we put together programs that are going to stop it?

We have tried to deal with the problem of drinking/driving in this province and I think we've been very innovative. I have very high regard for the work that has been done by my Ministry, by the Insurance Corporation of British Columbia, by Patty Manduca, by CounterAttack, by all the community volunteers, and the police and also by some of the special interest groups — victims groups, and so on — they've had an impact as well. But how are we going to do something that is effective and really get drinking drivers off the road?

I don't have all the answers, or even very many of them. But, in my constituency in Victoria, a group of high school students recently decided that they didn't have anything constructive to do on the weekends of an organized nature and they didn't like parties with drinking. So they came to my office and we helped organize, in conjunction with the local schools, the Municipality, and the police, a series of highly successful student dances. The dances have very strict rules: there is to be no booze and no drugs and they are strongly policed by the local constabulary and the students themselves. We have been getting 500 students at each dance and they are really enjoying them. They like going to a social event at which there isn't peer pressure to have a drink. So that is one new approach to the problem.

Certainly it is the sort of thing that I think can help because I really believe that the key to this whole problem is changing attitudes and educating people and we need to start with our young people because they haven't got all the baggage and bad habits that we've got. They haven't spent their lives — as I have — working in smoke-filled rooms and attending cocktail parties at which one is expected to have a glass in one's hand. It is so much easier just to put Ginger Ale or Perrier in that glass. I believe we have a really good chance to educate kids now and that is why we have to reach out to them.

Our Student Leadership Program has been tremendously successful and I congratulate the people at this table, many of whom are responsible for that. We have done other things as well. We have implemented mandatory seat belts, we've had a mass of public information programs and we've had a number of blitzes, road blocks and spot checks at Christmas and at holiday times. Those things help — I think they all help — but mostly we have got to change people's attitudes.

We also brought in pioneering legislation to allow the taking of compulsory blood tests in this province to get people who have been drinking off the road. I'm not interested in filling the jails with drunks. I am just interested in getting them off the road. If we have to infringe on their precious civil liberties a bit to do that, I don't care. I know that's an awful thing for a justice minister to say, but I'm more concerned about the civil liberties of the innocent people who get killed by those drinking drivers. I can tell you that the great Charter of Rights and Freedoms is not going to help law enforcement in this area one wit.

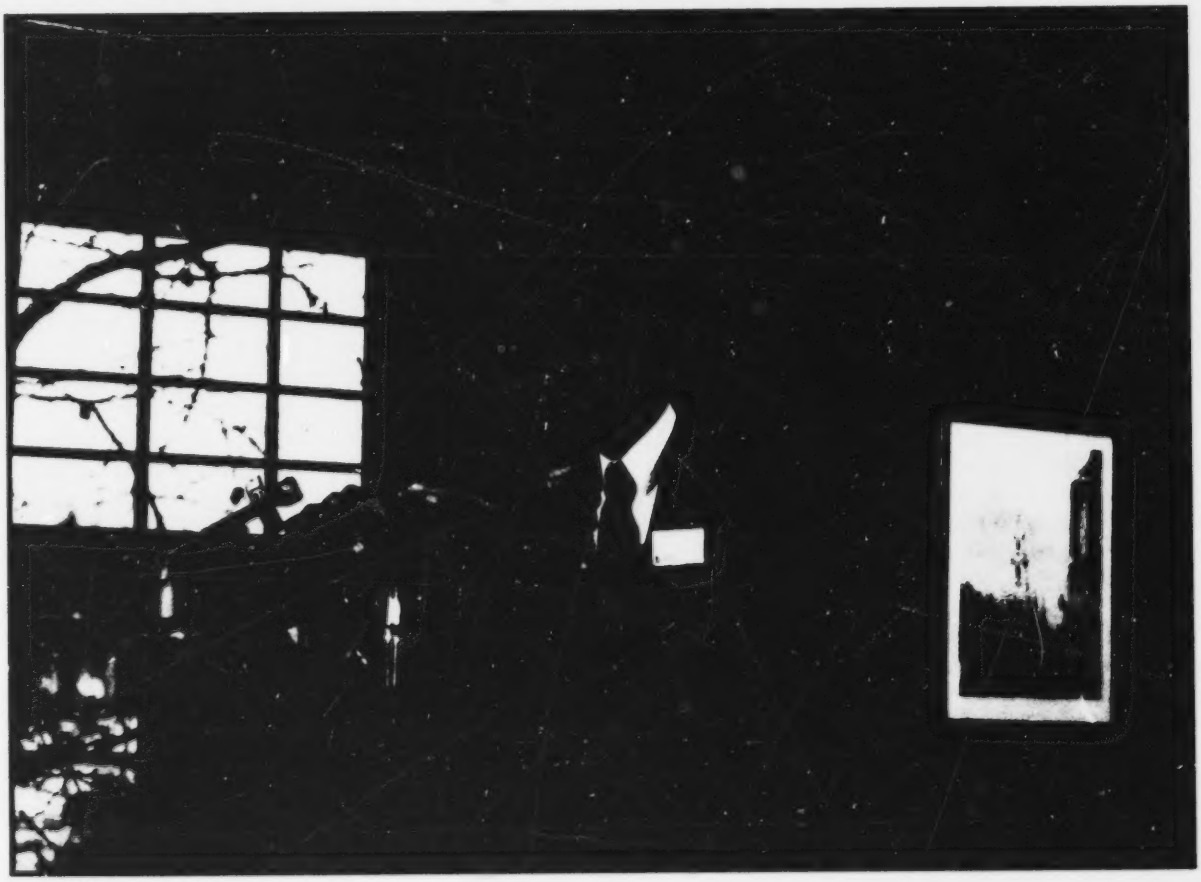
I attended a meeting of justice ministers in St. Johns, Newfoundland, last week with Mr. John Crosbie, Mr. Elmer McKay, and all the Attorneys General and Ministers responsible for justice from across the country. The Federal Government is going to proceed with changes to the Criminal Code which will, I believe, help a bit and give us a better range of sentencing, increase the minimum penalties, and allow the taking of compulsory blood tests under the Criminal Code after a warrant is obtained by telephone from a judge. This last change may be a little

hard to enact on a freeway somewhere north of Toronto, but it's a good start.

But all these things pale, I think, when we compare them to changing attitudes, educating young people, and simply rejecting the notion that drinking is an "in thing" to do socially even when one is going to drive afterwards. I am all in favor of scaring those who insist on drinking and then driving with CounterAttack ads, with legislation or with anything that will work towards eradicating this criminal problem.

# S P E A K E R

**DR. H. LAURENCE ROSS** is Professor of Sociology and Chair, Department of Sociology, at the University of New Mexico. His academic career has included, in addition to posts at several U.S. universities, a Fulbright lectureship at the Catholic University of Louvain, Belgium; and a visiting fellowship at the Centre for Socio-Legal Studies, Oxford University, England. His chief professional interest is the sociology of law. He is the author of *Settled Out of Court: A Sociological Study of Insurance Claims Adjustment* and editor of *Law and Deviance*. His long-standing interest in the contributions of studies in traffic law to sociology and criminology has resulted in his authorship of numerous articles. Professor Ross has served as the director of the Program in Law and Social Sciences at the National Science Foundation and trustee of the Law and Society Association. He is currently Secretary of the Society for the Study of Social Problems and editor of the *Law and Policy Quarterly*. He is also author of *Deterring the Drinking Driver*.



# DETERRING THE DRINKING DRIVER

**Speaker:** Dr. H. Laurence Ross. Professor of Sociology and Chair. Department of Sociology. University of New Mexico

My talk today is inspired by an experience I had in an American city. not terribly far south of here. A T.V. program was put on about two years ago. and I was asked to come up and join a specialist in traffic safety from the President's Commission on Drunk Driving. a local judge. and a local policeman. in a discussion of traffic safety — the experts and the citizens get together to fight drunk driving. Perhaps some of you people saw this broadcast because it was televised close to Vancouver.

It was a dreadful. embarrassing experience for me and it started me to think along the lines that I'm going to sketch more broadly this evening. Let me tell you a little bit about the broadcast. The thesis of the producer of the program was that one should get together a group of citizen activists who are demanding action. and a group of experts who knew what kind of action to take. Put them together with background material on the nature of the problem. and show how politics and academia and law enforcement can all work together. Well. the show started with a film of about 20 minutes in length. giving some tragic stories of people who were killed in drunk driving crashes — an extremely effective demonstration. It was the kind of thing that brought tears to everybody's eyes both on and off the podium. Behind our panel of four were large pictures of about a dozen people. very much like the ones on the M.A.D.D. poster you've seen on display today. people whose lives had been snuffed out in drunk-driving crashes.

With this 20 minute introduction the four speakers were to give presentations and then an audience — many of them. survivors of crashes or relatives of people who died in crashes — was to participate.

Well. something started to go wrong. The audience was clearly incensed with what they perceived to be the misbehavior of the judiciary and they took it all out on the poor judge. He had been selected for the program precisely because he was one of the most interested judges. one of the most active judges concerning the drunk driving who could be found within the precincts of Puget Sound. The message that came clearly from the audience was these people died because you were not punishing drunk drivers. And the judge was defensive. saying. "Who. me? No. I'm doing what I can when the case is made correctly. I convict. and I punish according to the law."

Then. when it came to my turn. I supported the judge. and I said. "Not only is this man very interested and active in trying to handle the drunk driving problem. but there's not much he can do about it — he or his brothers and sisters — because the police are arresting only about one in a thousand of the violators. And until the police get to the point where the public feels there's a real chance that they might be caught. the activities of the judiciary are sort of beside the point. If very few people — very. very few people — are punished. what difference does it make?" Well. this didn't go over either.

And then. the policeman came up and really handed us a wonderful talking point. He said. "We are not going to do any more. We have lots of things as policeman to do. We have the rapists. the robbers. the murderers. and so on: traffic safety is indeed part of our job and we devote a lot of our resources to it in fact. we devote as much resources as we possibly can — and you won't get any more out of us." And I thought. well that'll straighten things out. you know: it will support my point. It didn't!

Rather. the audience went right back to picking on the judge. and on Larry Ross. One of the indexes I saw of how badly things were going was that. at the beginning. when people were referring to me. they said "the Professor." By the end of the program. it was "that man." Now what went wrong? I've been thinking about that for two years. and let me give you my latest thoughts as to what went wrong in that T.V. broadcast. The thesis I want to present is that we're facing drunk driving in a situation much like the proverbial blind man and the elephant.

You remember the blind man and the elephant: each blind man had hold of a different piece of the beast and. generalizing from the piece that he had — and not knowing that there was more to it — each blind man came up with a different conception of what the beast was like. The one who had the tail said. "Well. an elephant is like a rope." And the one who had the leg said. "Oh no. an elephant is like a tree." And the one that had an ear said. "Well. an elephant is more like a great big leaf." and so on. And the point is they were all right. Each one of them

correctly interpreted his experience. The problem was in the inability of these people to envisage the fact that what they were holding was not a good example — not a representative sample — of the beast as a whole. And I think that may be what our problem is, what happened in that T.V. interview and what's happening much more broadly in terms of the politics of drunk driving.

The blind men in question are on the one hand citizen activists, on the other hand safety researchers, like myself, and I would add a third group of blind men, law enforcement people, including police, and judges, and perhaps some others as well. I think each of these groups in looking at the drunk driving problem, has developed a view of what drunk driving is and, therefore, what kinds of measures are appropriate to its control. These views are correct but they are partial.

Furthermore, in North America today and, I think, to some degree elsewhere, the politics of drunk driving control are very much in the hands of one of the blind men, and the others are left out. The citizen activists are responsible for most of what's being done politically in the area of drunk driving control and it is their view of this elephant that has governed what we're doing to a remarkable degree. As their perspective is partial, so our countermeasures are also partial.

Let me try and develop this a little bit more and then try to lead you into a defensible position on what we ought to be doing. Let's go back to the citizen activist's view. The viewpoint of a citizen activist member of M.A.D.D. or of R.I.D. and other such organizations is developed largely on the basis of personal experience. Most citizen activists, I believe, are people who have personally experienced a tragedy. They have lost friends, they have lost relatives, they themselves have been badly injured, they're hurt. Therefore, to them, the drunk driver is someone who has hurt somebody else. I think that's an important experience of at least many citizen activists. They are intimately familiar with a specific story and also have heard many other stories, all of them absolutely true and all of them that pull at our heart strings.

The view of the citizen activist, in addition to being centered on this experience of harm, also contains a moral element. That is, the citizen activist sees on the one hand a perpetrator, a villain. Then they see an innocent party, the victim. These are different people; they're not the same person. The villain has hurt the victim. These villains frequently are found, on examination, to have questionable moral character. Often they were extremely drunk. These are not people who went out and had one too many at a wedding anniversary; they are people who are consistently and chronically drunk. They are irresponsible. They have perhaps had contact with the criminal justice system, they've had contact with therapy, and nothing has worked.

In short, the drunk driver is a member of a small but very dangerous group of social deviants. In consequence of this view, the drunk driver deserves to be punished because he is irresponsible, and because he has committed harm. This is a serious criminal who has done something very bad; it's not a matter of a mistake, and justice requires that he be punished. I've heard Candy Lightner say, "drunk driving is the worst crime in America." And she's absolutely right — if one understands by drunk driving what she has experienced — if one shares this picture of the person who killed her daughter, Carrie.

Let's take, then, a different picture from another blind man, perhaps. That's the traffic safety researcher. The traffic safety researcher sees the drunk driver as someone who has an elevated chance of hurting somebody, but the absolute level of that chance is indeed miniscule. We've calculated it for the United States and I think the Canadian figure won't be very different. The chances of a death — a traffic-related death due to drunk driving — is one in 333,000 drunk miles. Now, that's just not a very high absolute figure. Granted, it is much higher than the figure would be that you heard this morning for Canada for total driving, but it is still a very small likelihood.

The reason we have these horrible figures of 40,000 and 50,000 deaths in the United States and 4,000 deaths in Canada is because we drive so much. When you apply the very small risk to the enormous figures of miles traveled, we come up with what are national tragedies. But from the viewpoint of the individual drunk driver, or from the analytical viewpoint of the researcher looking at the individual trip, drunk driving is — to all intents and purposes — extremely unlikely to result in harm. So a very different picture appears.

I suggest to you that this view is largely shared by law enforcement. The typical drunk driver who is apprehended by the police, the typical drunk driver who appears before a judge is someone who has not harmed anybody; it's someone weaving down the road who has been stopped and found to be over the limit.

Another insight, particularly of sociological safety research, is that the involvement of the population in this

risky activity is massive. That is, we have a contradictory perception concerning the proportion of people who are involved in drunk driving. I have to differ with the statement I heard today from the Attorney General that he's willing to compromise 10 percent of the people for the benefit of the other 90 percent. I don't think those are the right figures. We have, for instance, a figure from the Wall Street Journal that 80 percent of United States business leaders admit to having driven while impaired.

Drunk drivers are not a small bunch of deviants and, furthermore, they come from all social strata. Drunk driving is not just a matter of the working class, the minorities and so on. It is by and large a matter of contributions from throughout the society. This leads us, then, to question one of the assumptions of the citizen activist position, which is that of moral responsibility.

The viewpoint of a sociologist is that the drunk driver is a normal, predictable consequence of the way in which we do things in our society — specifically, of the way in which we utilize alcohol in our recreation and the way in which we utilize the automobile in virtually every social activity. We're prisoners of the automobile. There are, to all intents and purposes, no alternatives for transport. Then, we also have an alcoholsodden society. To expect that we ordinary human beings are able to avoid the temptations, the opportunities, the pressures which surround us is to ask that men be angels and to ignore the totality of sociological theory.

Drunk driving is ordinary behavior, it is seldom harmful and it is problematical only because it is so common. One might start speculating: aren't there other kinds of behavior like this that we don't treat in the same way? I think I'll simply mention cigarette smoking and recreational hunting. There are certainly lots of activities which one might say are proportionately just as dangerous as drunk driving and which are not viewed the same way.

Let's turn to the politics of drunk driving. I've stated in the introduction to my talk that the politics is very much in the hands of the citizen activists and represents their point of view. Why should this be so? I think it's fairly obvious that few people were paying much attention to the drunk driving question until 1980 or 1981, with the founding of M.A.D.D. and other citizen activist organizations. And the reason that we are here — you and me — is because of the citizen activists. These are people who care: not many others do. They are the ones who are pressing the demand for action of some kind and nobody else is pressing it.

What do they do? They appeal to legislatures, they appeal to administrators and to executives. One of the outcomes has been, throughout this continent, the creation of large numbers of commissions designed to study the problem and make recommendations. And who are on those commissions? Well, the citizen activists want to be on them. More importantly, it's not just a matter of who's on them, but who takes the time and trouble to come to the meetings of these commissions and to testify.

Universally, these commissions have not gone out and done any research. They have not tried to make any independent investigations as to the nature of this problem. They have sat back and listened to stories. And who tells the stories? It is those people who have been wounded by the loss of loved ones or who have been injured themselves. They are the ones who come and they tell their true stories and, therefore, the reports of these commissions — most notably the United States President's Commission — have been monuments to the view of the citizen activist and have very much ignored the other viewpoints in question.

Now, what is this activist political viewpoint? What are the kinds of things that are being demanded? I suggest to you that the principal demand of the activist, as represented in the President's Commission Report and most other reports, has been for punishment. Remember, the drunk driver is a villain and he deserves to be punished. But the citizen activists have seldom been willing to say that the punishment ought to be imposed just because it is merited. Rather, they have argued that the punishment should be imposed because it will deter, because if people are punished, others will look on and say, "Gee, I won't do that. I'll resist those social pressures because of the fear that I'll be caught and punished." So the drunk driver who is caught becomes a sacrificial lamb, in order to get the rest of us to behave. I will just mention in passing that one can raise some question about whether we ought to be using human beings as means to ends. But leaving that question aside, I think we can get to the question of whether or not it works.

That's what I wrote about in my book, "Deterring the Drinking Driver." I approached the question of does it work from the general viewpoint of law as a tool of social policy, and I approached it from the knowledge that law is not something that walks off the books and immediately transforms behavior. The effectiveness of law is a complicated and questionable kind of thing. The law works in some cases; it doesn't work in other cases. I was using the drunk driving case as a means of exploring the

general issue of what can law do and, contrarywise, what can it not do. I reviewed the world literature, and those of you who are familiar with the book know the results. I'll very briefly state them for those who haven't yet read it.

There are two major thrusts of deterrence theory. First, the theory states that people will be deterred to the extent that they perceive that violators are going to be punished severely. Second, the theory states that people will be deterred to the extent that they perceive a high likelihood that they will be punished at all. So it is, on the one hand, the severity of punishment that is expected to be effective, and on the other hand, the certainty or likelihood.

If you look at interventions throughout the world, beginning with the Scandinavian laws of the 1930s to the present, we find some rather mixed evidence for deterrence theory. Let's start with the good news. When you have an intervention that is highly publicized, that people attend to, and that promises to increase the chances of being caught and punished, we get deterrent effects. That's the good news, and the best example of this is the Road Safety Act in 1967 in Great Britain. You in Canada had similar legislation in 1969, which — although it seems to have had a much smaller effect — nonetheless can be said to have saved lives and prevented injuries when it was put into effect. The reason these laws work, I propose, is that drivers hearing about them, hearing about the fact that police now are armed with things that they call breathalyzers — little machines, science in their pocket — think that the chances of being found out have increased dramatically and they had better be careful.

That kind of thing seems to work. So does the kind of intervention we've had here in Vancouver many times — a campaign focused on a short period of time when there is adequate publicity, when the people know: "Folks, the cops are out there and they're looking for you" — this works.

The bad news is it doesn't work very long. There are simply no examples anywhere in the world to date of a deterrence-based intervention that has worked for more than a few months, or at most a couple of years. Why is this?

I speculate in the book and I'll share that speculation with you. It goes back to the question, what's the real probability of being caught? That probability has nowhere been claimed to exceed one in two hundred. That's the highest figure that anyone has ever reported to the best of my knowledge, and more common estimates are in the range of one in a thousand. The real probability of being caught is very, very small. Why is that? Two reasons: one is there just aren't enough police resources, given the massive amount of drunk driving we have, and the other is that this behavior is very difficult to detect. It's not like speeding where you can sit out there and pull them all in. It's an extremely difficult kind of enforcement task.

I think that our President Lincoln was right: you can't fool all the people all the time. If the actual level of risk is very low, even though you may scream that it's high, people will eventually learn. They'll ask themselves: "When did I last see a policeman, when was I last stopped?" They'll ask their friends and eventually learn. Certainly the kind of evidence we've seen conforms with a learning theory interpretation, that is, things start to go back to normal slowly in a curve suggesting that what's involved is the learning process. That's happened everywhere that we've seen deterrent effects on drunk driving.

There's even more bad news for the deterrence proposition. Just about everywhere that the deterrent intervention has been focused not on certainty of punishment, but on severity, nothing has happened. Despite the fact that there have been claims for some of these interventions — indeed, the National Safety Council, in its proverbial wisdom, has given awards in some cases — there is no tenable evidence that severe penalties have ever deterred drunk drivers. Why is that? I suggest to you the same reasoning may explain this fact. If the chances of being punished are very, very low, then what does it matter what the punishment is going to be, because it's not going to happen?

These very low probabilities are viewed as negligible, and we don't worry about them. Remember, there is a death penalty for drunk driving. If you drive drunk, there's a chance — one in 330,000 impaired miles — that you or somebody else will die. If people aren't afraid of dying in a crash, why are they going to worry about losing their licences, about going to jail for two days or whatever? I'm not saying they're right or wrong: I'm saying the evidence suggests that this is the way people are thinking.

In any event, we have no evidence supporting the deterrent effectiveness of severe penalties. Yet, the citizen activist's position continues to push the idea of punishment. This is understandable given what these people have been through, given the tragedy in their lives.

but it is not supported by the theory they raise in order to justify legislation. In contrast, citizen activists seem relatively unenthusiastic about countermeasures that might be effective but that seem to be protecting the drunk drivers themselves.

So the safety researcher has to say that current drunk driving politics are misguided. The deterrence-based measures, if they work, work only in the short run. This isn't to say we should abandon the deterrence-based measures; indeed, they have saved lives and they're likely to have been quite worthwhile in terms of the costs and benefits involved. But they are not — by any stretch of the imagination — a sufficient answer to the question, what should we do about the drunk driving problem?

Well, if one is going to be nasty and criticize the general thrust of current social policy, perhaps he has an obligation to try to say what's better, what might work. I think you've heard some relevant ideas today. I asked Pat Waller why she gave my paper this afternoon. Let me remind you of a few things she talked about. Basically, there are two approaches other than deterrence which might be helpful in reducing drunk driving, or at least the consequences of drunk driving. The first of these depends on our sociological understanding of why people drink and drive. I may remind you that we drink and drive because alcohol is intimately involved in recreation — and in business for that matter, with the three martini lunch — and we are totally dependent on the private automobile. That's why people drink and drive.

So one possible avenue, then, to control drunk driving — and one that makes a lot more sense to me, theoretically — is to try and change, not the individual, so much as the social environment. Try to relieve some of these pressures, try to intervene on the level of the temptations, the incentives, the inducement to drink and drive — and perhaps I can shorten my talk by simply referring to what Pat told you. Such things as server interventions, such things as possible changes in the price of alcohol.

Let me illustrate with an example of a practice that I think is pretty awful. In the university where I used to teach, the student newspaper every week had an ad for a local bar. It told the students that on Wednesday nights you could drink all you wanted to — all you can drink for $6.95 — and then, underneath, it advertised free lighted parking for 2,500 cars. Now that's perhaps the kind of thing that needs control. It's an invitation to drink and drive, to drink a lot and drive; it's an invitation to drive while drunk. Perhaps that kind of thing in its many various guises — two-for-one happy hours, beer in pitchers and so on — that wise social policy wouldn't allow.

Pat said, and I'll second again what she has told you, we're in favor of evaluation. We don't know the answers here, but these are things that make sense to us. If they're going to be tried, we ought to be as open minded about our own suggestions as we are about the suggestions the citizen activists have made to us, and we ought to see whether they are going to work. But, as a sociologist, it seems sensible to me that the more direct point of intervention is in the institutions that cause drunk driving.

If you look at the President's Commission Report, incidentally, there is no analysis of what causes drunk driving; it is a totally non-causal, nontheoretical document. The Commissioners seemed to assume that we know the answers. I don't think so and I'm willing to state this diagnosis in a tentative way. Likewise, as Pat told you, transportation alternatives are possible countermeasures that have been more or less overlooked. These are harder to work with because we have built cities that assume and seem to require the private automobile. But there are modes of public transportation, taxi-like systems with computer programs that might get people out of some cars and reduce the number of occasions of drunk driving, and those kinds of things which Pat described ought to be followed up, tried and evaluated.

There's another line of approach which suggests that, rather than trying to control drunk driving, we might look at the relationship between drunk driving and injuries and deaths, which are perhaps the things that ought to be bothering us. In other words, I am suggesting that drunk driving — like much human behavior — may be too difficult, too expensive, to control if there are indeed ways of living with it while reducing the numbers of deaths and injuries. In other words, if the people are kept out of Dr. Maull's hospital, maybe we can live with drunk driving and therefore with our current patterns of transportation and alcohol consumption.

There are three links which we might look at as possible opportunities for intervention between drunk driving, on the one hand, and deaths, on the other. The first is, can we intervene in the link between impairment and error? In other words, is there a way of making the driving task easy enough that even the impaired can do it without error? The answer is yes. If you want a very expensive way of doing this, we have the intervention known as the limited access highway. What that does is reduce the number of occasions of cross traffic. There are the on-

ramps and the off-ramps — we call them Interstates in the United States — and these highways manage to avoid an awful lot of the errors which you get on more conventional types of roads, granted at enormous cost. That's why we don't have one of them going up to your driveway.

However, there are cheaper measures that research has suggested can also be effective. I think one of the simplest and one of the most intriguing is the matter of that line along the side of the highway. There's been research done which suggest that if you paint stripes along the side of highways, drunk drivers are less likely to go off the road. That's if you paint your standard four-inch cheap paint stripe. If you really splurge and paint an eight-inch stripe you get better results. A simple thing like a can of paint can save lives, and how does it do it? Not by preventing drunk driving, but by making the driving situation easier for the impaired driver; it will also make it easier for the unimpaired driver as well.

That's one link. Let's go to a second one. Suppose there are driver errors, nonetheless. Is there some way of preventing those errors from resulting in crashes? Again, the answer is yes. New Mexico is a nice place to demonstrate this because huge stretches of our state are nothing but desert. It has grubby little plants on it, and if somebody runs off the road in New Mexico, he ends up in the sand. That's it. So you get drunk, you drive off the road, you get stuck in the sand. Call the AAA and that's the end of the story. No tragedy. Now that's not going to work in British Columbia because you have all those fir trees. Well, how about telling the lumber companies to go and cut all the fir trees within a hundred yards of your major highways so that British Columbia can look like New Mexico? And, more seriously, so that when people do go off the highway, there aren't these impenetrable objects to create crashes. There are other countermeasures of that sort which I could go into.

Let's turn to the third link, and that is between the crash and the injury and death. Is there something that we can do, knowing that people will get drunk, make errors, have crashes? Can we stop them from being injured or killed? Again, the answer is yes. The people of British Columbia in their wisdom have decreed that you ought to use one of the devices in this category, seat belts, which will reduce your chances of injury and death by two-thirds. So we have then yet this other point of intervention.

Now to conclude what I have to say, I'd like to suggest that maybe one improvement in our politics would be to redefine the problem that we're talking about.

The citizen activist, because he or she has met with tragedy on the part of a drunk driver, has a specific concentration on that behavior, drunk driving. That is, there's something different for the citizen activist about someone who's killed by a drunk driver, as compared with someone who's killed by a driver who fell asleep or someone who's killed by a driver who dropped a cigarette in his lap and he's looking for it, or someone who's killed by a driver who had a bee fly in the window and buzz around his neck, or someone who had a tire blow out. There are lots and lots of causes of traffic crashes. Drunk driving is one; the contribution is considerable, but it is not even the majority of crashes.

Our best estimate of the causal relationship between alcohol and crashes would give you about 25 percent of fatalities, which means that there are 75 percent killed in crashes *not* caused by drunk driving.

I'm suggesting then, let's define the problem not as drunk driving, but as crash-related deaths and injuries. I think that opens some doors for us, some very welcome doors, because it provides us with a lot of other places to look for countermeasures of the type that I've just described. That is, if the problem is death rather than drunk driving, we have to evaluate whether it is more effective to go after the drunk driver by threatening punishment, by giving up our alcohol, by giving up our automobiles to some degree, or whether we should say that is a blind alley, that it is very expensive, that it presents a lot of problems and there are ways in which we can achieve the control of the injuries and deaths in a more effective manner. I think that's what we're going to discover if we choose to define things this way.

Let me give you an example of some of the problems I've had with citizen activists in attempting to draw them into this perspective. This example comes from my former home town of Buffalo. Buffalo is on the New York Thruway, a highway paid for by tolls. The Thruway in the metropolitan area was lit — as it ought to be in this dark icy climate — by electric lights that have an important safety effect. However, to get on and off the freeway there were entrance and exit ramps, and the powers-that-be decreed that it's not the Thruway with its toll money that should pay for lighting those roads, it's the towns in which these exits and entrances are located.

Well, one of the richest suburbs of Buffalo decided that taxes were pretty high and that one way they could save money was to turn off all the lights on the Thruway exits and entrances. And so they did, and to the best of my

knowledge it s still black in Buffalo if you try to get on the New York Thruway.

Now. I was associated with a citizen activist group called RID — a wonderful bunch of people — and I tried to say let s go down and protest that. Just in order to save a few bucks on the tax bills of these wealthy people, they are exposing all who use the Thruway to these risks. And they said, well, that s not our concern: let the engineers worry about it, we re worried about drunk driving.

I despaired, because it seemed to me that someone who experienced injury or death because he couldn t see, due to the fact that the town had turned off the lights, was as tragic as somebody killed or injured because of drunk driving. I further suggest that, if we re-define the problem, we can begin to see that the separation of the victim and the villain is untenable. Sure, there s not much blame one can place on Carrie Lightner for what happened to her. But, if we look at the bulk of fatal accidents as we know them in the research literature, one of the most perplexing and disturbing findings is that most people killed in drunk-driving accidents are the drunk drivers. It is in general meaningless to separate victims and villains. The villains and the victims tend to be the same: 55 percent or so of those killed are themselves drunk drivers. The typical story is: Jones was drunk, he was driving down the road, ran off, went into a tree and killed himself. That is the typical one: Carrie Lightner is the exception.

Then add the additional 20 percent of those killed who were passengers in the car of the drunk driver and who, by and large, were also drunk and who I think are hard to distinguish as victims or villains; add the additional 10 percent who were drunk pedestrians, and we begin to see very few victims who are not in some sense blameworthy.

One of the tragic situations we face in New Mexico occurs near the Indian reservations. We have the highest drunk driving rates, the highest fatal crash rates in North America, in those counties abutting our Indian reservations. When we try to figure out what s going on there, what we find is a very simple story. There s no liquor sold on the reservation. Everybody then goes off the reservation on Saturday night in order to drink. The wealthier drive their pick-up trucks and the poorer walk. They all get drunk and they start going home. The wealthier people are driving their pick-up trucks and they run over the poor who are walking, drunk, in the middle of the road. Who s the villain, who s the victim? I suggest to you that the separation is the product of a very small number of cases in terms of the total crash injury and death picture.

Finally, many measures that can prevent death and injury are available, but they re overlooked in present policy because they intervene after behavior. In other words, they assume — or they re indifferent to — drunk driving, and they re directed at the links I mentioned between drunk driving and the tragedy that occurs thereafter. They will also tend to save the lives of drunks as well as of those people who are regarded as innocent.

It s my hope that the fervor and the anger, the indignation, the activity, the energy of the citizen activist can be redirected to the conception that I m offering you — to the problem of deaths and injuries rather than drunk driving. In other words, I m hoping the citizen activists will regard their terrain as traffic safety, rather than just drunk driving, and that their goal will be to prevent recurrence of what happened before, rather than to get even for what happened before. I suggest to you that the bottom line for our policy ought to be, not sobriety, so much as the saving of lives. "Every man s death diminishes me, for I am of mankind; therefore, do not ask to know for whom the bell tolls; it tolls for thee."

**Question #1**
I m sure that you expected to hear from one of the activists, and I am one of them. It is evident that the drunk driver has been researched much more than the victim, because we are not only for punishment, we are for deterrence. We are for education, we are for prevention, we are for enforcement and — believe you me — the way we listen to you, you are the dream of the drunk driver.

**Dr. Ross**
I m sorry to give that impression: I do not intend to be the dream of the drunk driver. Rather, I am intending to try to show that your experience -- which is valid and true — leads to policies that are not valid and true.

**Question #2**
Isn't that only your opinion though, Dr. Ross? No disrespect, but isn't that your theory?

**Dr. Ross**
Now, I tried to acknowledge the fact that, but for people like yourself, we wouldn't be having this conference — or the 10 or 15 that I have attended in the last year — where I think progress has been made in the whole traffic safety area. Using the blind man analogy, I am trying to point out that one defines according to his experience. What I'm asking the blind man to do is open his eyes and look at the rest of the creature to the extent that he can, even though he has a firm grasp on one real part of the problem.

You ask, am I talking about theory or fact? It's hard to make that distinction, but I'll try and go along with the idea. The facts concerning deterrence, I think, are that it does not produce long-term effectiveness wherever it has been tried and evaluated. That does not mean that it's impossible to get such effects. It just means that what has been tried — to the extent that we've tried it — doesn't work very long and that there is no model available for us that points the way to effective deterrence. Now, I would be willing to suggest that there are probably things that we could do that might very well have some effect in the deterrence line.

For example, it's been proposed that we multiply manyfold the amount of police devoted to traffic safety, that we engage in large-scale systematic roadblocks so that, when you leave here and you go to your home, you're pretty sure that you're going to run into a roadblock and be tested for alcohol. If one can imagine that kind of police presence, I think there is a chance for some effectiveness, even long-term effectiveness. What the price of that is, is something else. Whether in a democracy people will pay for it, is something else. The response of the Seattle policeman, I think, was fairly indicative: "Given the kinds of resources that the public has been willing to provide for law enforcement up to now, we are doing what we can." And "what we can" means a chance of one in a thousand of apprehension — or to put that in a somewhat different statistic I haven't mentioned — one drunk driving arrest for every 5,000 drunk miles driven in North America.

That's just not a very persuasive kind of figure, and the kind of improvement that's going to be necessary to gain the attention of the drunk driver — in the face of all the inducements to go out and do it — is going to have be a many-fold increase.

**Question #3**
One of the things we used to hear a bit about was the air bag, the automatic opening, and there was a lot of input saying that this was really something that could work. Then, the big push came into the seat belts and the air bag just sort of disappeared. I'm wondering what's happened to that when you were talking about some of the reasons, some of the effective ways we could assist, even if the drunk driver isn't removed. Why has all of a sudden this air bag concept just disappeared? Because it was a very minimal cost for it to be implanted and put into this car at production, and, of course, we do have one gentleman here who maybe could give us a bit of information on that since he's telling us what good products he has.

**Dr. Ross**
Leonard Evans has demurred already once today from representing his corporation in these precincts. I think, if he wants to speak, that would be fine. I've read the literature on both sides. It's not in the deterrence area and, therefore, I haven't surveyed it as thoroughly as I might. But my conclusion is you're quite right — that the air bag is a cost-effective kind of countermeasure — that by putting it in we will save many lives. In particular, by putting it in and also wearing seat belts, we have the potential for reducing the toll of deaths and injuries considerably without even touching the drunk driving question.

I think the air bag ought to be made available on a mass-production basis and this is the kind of thing that the citizen activist groups ought to be yelling for. I hear their voices faintly in the background but I don't see them up front carrying the banner, which I would hope they would, because they are so effective when they do something.

**Question #4**
Dr. Ross, point of information. Well, M.A.D.D. was started by magnificent, courageous mothers who are victims. There are hundreds of us who are not victims yet — who don't want to be victims, who have no axe to grind, who want to prevent so that our children will live.

**Dr. Ross**
Great. I think that certainly you are supporting in this province a magnificent enterprise with those goals in mind, and I would hope for your constant and faithful support for the kind of things that project CounterAttack has been doing.

**Question #5**
It seems to me, to extend your analogy, that the elephant is injuries and deaths on road — not just those individual deaths associated with drinking/ driving. Deterrence and enforcement with regard to drinking/driving, as you point out, are of limited effect at best. This doesn't mean that there is no role though, I submit, for the police.

An example that might work: we find in British Columbia, one half of our casualty accidents occur at intersections. We know that simply placing a police car at an intersection — and we can define those ones that are dangerous — will reduce accidents. So there is a role for enforcement to try and shrink the elephant down to size. But I think that one of the problems that we have is that we tend to think that this rather massive beast consists of nothing more than alcohol.

**Dr. Ross**
Now certainly I didn't mean to give the impression that I felt enforcement was of no use or that law was of no use. I would lose my professorship very fast if I were to say that. Law can be shown to be of use. Law can be shown to work very well in certain circumstances and one of the best comes right out of the traffic field. Law, deterrence-based law, works very well when the offense is evident — when it's obvious, when it's easy to see — and the simplest kind of criminality to see is illegal parking.

New York city wiped out illegal parking on its cross-town streets. The policy makers there decided that the amount of congestion had gone beyond the bounds of tolerability, and what they did was simple. They patrolled these cross-town streets with tow trucks on an average of once every 20 minutes. And when they got your car, they took it over to the Hudson River, impounded it and it cost $100 to get it out. And that ended the problem of illegal parking.

I think the difficulty with enforcement in the drunk driving area is that the violation is so much more difficult to detect. Not impossible, but I mean the inherent capabilities of law are not particularly suited for drunk driving. They're not totally irrelevant, but it's a tough case. I think we have to recognize the toughness of the case and then ask ourselves whether there aren't countermeasures that fit a little better to the problem that we're addressing.

**Question #6**
Dr. Ross, do you find the problem of driving and drink a facet of the alcohol problem in our society?

My question is are we not looking at a major health problem? In terms of attitudes, if that is the case, do you see education programs to be helpful?

**Dr. Ross**
It's a good point. Maybe I'm guilty of some of the same things I accuse a citizen activist of. If all you have is a hammer, then everything looks like a nail. If you're a traffic safety person, you tend to be limited to that and certainly there are people in their movements that have defined alcohol as a problem. The best example known to me is the recent report of the National Academy of Sciences called "Alcohol and Public Policy," in which the position they took was precisely yours. And that is that alcohol is a public health problem and drunk driving — there was a chapter on drunk driving — that's one aspect of it. Cirrhosis is another and violent crime is another aspect, and so on. I think that, again as a general matter, to define a narrow problem as part of a broader one is usually a good idea. It helps us understand, not only understand theoretically, but it gives us more choices as to what we can do about the problem.

Now I'll suggest that the next time we have a meeting of this type, you might want to invite someone like James Mosher or Mark Moore to present that picture.

Now, about education. I'm an educator. I guess I feel education money is well spent. I don't know that we have a very good knowledge of what and how to teach about alcohol. I think we have some good ideas but I'm not sure that we know very well what kinds of programs are most likely to be effective. So, again, I'll repeat Pat Waller's position. Before we adopt widespread programs, we ought to know better what they're capable of doing. I'm willing to guess that there are indeed things that can be done in education, both in the traditional sense of classroom education and a broader sense of propaganda and publicity, that might be effective.

**Question #7**
Could I ask your for your comments on changing or raising the drinking age?

**Dr. Ross**
Well the drinking age area is part of this general approach to changing our institutions, which I've suggested is an alternative to blaming the individual and trying to deter. It's an area in which we've had a lot of experience, because of what we can call natural experiments, in the United States. During the 1970s when we were involved in the Vietnam war, many states recognized the demand of young people to be treated as adults in all sorts of ways, at an age when they could be drafted. Among the things that happened was we lowered the voting age to 18, and also, in many states, we lowered the drinking age. If I'm old enough to fight, I'm old enough to drink.

With the passage of time, something very unpleasant became evident, and that was large increases in the numbers of young people involved in fatal traffic accidents. And with the acknowledgment that something was wrong there, a few states experimented in reversing the previous action and went back from age 18 to 21. Then something very welcome was noticed: the losses were recovered. As we went back to the 21-year-old drinking age, there were fewer people in that age group, 18-21, and also the 16-17 year olds who were killed in traffic accidents.

As you probably know, our Presidential Commission has recommended, and the President endorsed, and we right

now have legislation that is encouraging the states all to go to 21. Now what is this? What is the raising of the drinking age? I have a name for it. it's Prohibition. The reason it differs from what the United States experienced back in the 1920's is that it's Prohibition for some. but not for the rest of us. and the people who get selected for the Prohibition are those who can be shown statistically to be particularly bad drunk drivers.

But. wait a minute. it's not just the 18-21-year-olds — it's the 21-24year-olds as well — who can be shown statistically to be particularly bad drunk drivers and. if one were to follow the scientific evidence. the policy ought to be no drinking until you're 24. Now that's not a serious political possibility. Why 21 and not 24? Well. one of the reasons is that the kids 18-21 are politically helpless. They don't register. they don't vote. and by and large you can forget about them. So they can be sacrificed to the need for public safety. The 21-24-year-olds. who are just as dangerous. vote too much. We have to let them drink. And. therefore. there are — without question in my opinion — higher death rates in that age group due to traffic crashes than there would be if one were to do the impossible and raise the drinking age.

One of the big lessons of Prohibition — in addition to the fact that it didn't work in general — was that it reduced the amount of drunk driving terrifically. and this mini-Prohibition does work. But I think one of the caveats which we have to pay attention to — one of the warnings — is someone's paying a price for this. There are people who are being deprived of something they consider to be their right. and we've outvoted them — but I think with a bit of guilt. So. yes. This is unquestionably a policy that saves lives and injuries; it is also a policy that has costs. particularly in terms of the liberties of the people who are governed by it.

# S P E A K E R

**THE HONORABLE ALEX V. FRASER** is Minister of Transportation and Highways. He is M.L.A. for Cariboo. First elected in 1969, he became Minister of Highways and Public Works in 1975 and Minister of Transportation and Highways in 1979. Fraser served as Mayor of Quesnel from 1958 to 1969, served as chairman of the Regional District of Cariboo from 1968 to 1969, and is a Life Member of the Union of British Columbia Municipalities.

# HIGHWAY SAFETY IN BRITISH COLUMBIA

**Speaker:** The Honorable Alex V. Fraser, Minister of Transportation and Highways

As the Minister responsible for highway safety, I have grave concerns that we may not be able to maintain the current decrease in accidents that we are enjoying at this time. I'll comment on the accident statistics in a moment. Within my Ministry, we have many programs directed at reducing the number of accidents on our highways, both from the Highways Operations Branch and from the Motor Vehicle Department.

Let's first look at the Highway Operation involvement in traffic safety to give you the big picture of the Ministry's involvement in the area of road user safety. In the last three years, there's been a major reduction in the number of fatal accidents in our Province and this has been attributed to several factors, such as tougher laws dealing with impaired drivers, the benefits from seat belt wearing and moderate world speed limits.

However, one factor, which is seldom, if ever mentioned, is the important contribution of the continued improvements to our highway system. The reconstruction of old roads to new alignments, the widening of sections from two to four lanes and the day-to-day upgrading of the highway department has made a significant, if quiet, contribution to our improved safety record. Although it is still too early to separate the effect of the highways expenditures on reducing the numbers of serious accidents in the Province, there's little doubt that the cumulative effect of certain roadworks is now benefiting the motoring public. The list includes, $2 million being spent annually on installing and maintaining traffic guardrails along steep roadsides, and on highway medians to prevent vehicles from leaving the highway, rolling into ditches and having serious accidents.

Some $1.75 million have been spent each year to construct fencing and cattle underpasses to keep livestock and, in some cases, wild animals from getting onto the highway in conflict with vehicles. The paving of roadside shoulders and the painting of white edge stripes are known to reduce the number of side-swiping and head-on accidents, and expenditures on paving that were previously gravel shoulders are now running at over $2.5 million a year. The expenditures on the installation of new and upgraded traffic signals, as well as improved lighting at intersections, have risen to $4.7 million annually. The effect of these improvements in reducing traffic conflicts at intersections is well demonstrated, particularly in the benefits from cutting the numbers of the very severe right-angle type crashes.

The technical support to these programs comes from the Highway Safety Branch, which has modernized our guardrail practice by introducing barrier shapes and layouts which are suited to smaller cars and are more forgiving to vehicle occupants during collisions. At the same time, active development is underway to produce a priority system which will use actual accident records to improve accident black spots by direct remedial work. Bridge parapet designs have been strengthened to prevent vehicles crashing through into the rivers below and a technique to strengthen existing bridge parapets is being worked on.

Increasing attention is being paid to the safety of pedestrians, particularly school children, and nearly a third of a million dollars is spent each year in a series of local shoulder improvement works to provide walkways on school approaches.

Each year, the Ministry mounts a massive and expensive winter maintenance and snow clearing operation to make our highways safe. As a matter of fact this morning, the first thing I heard on the radio, our crews were out sanding the Lower Mainland's icy roads — where they're not supposed to have ice. This involves a team of about 2,500 operators and 580 mechanics that require a winter operation budget of $45 million for snow and ice removal. To be more specific, that $45 million would include $9.2 million for plowing, $15 million on 530,000 cubic meters of sand, $5.5 for 43,000 cubic meters of salt, and $5 million will be spent on patrol, which means sand trucks fully loaded and patrolling for icy spots. In addition, $200,000 was spent on road reflectors, cat's eyes or studs, as they are called. In fog and heavy rain, these reflectors are often the critical factor in helping drivers stay on the road.

In yet another area of traffic safety, we will be spending $400,000 on an avalanche program, which involves highly skilled avalanche crews who operate weather stations, measure snow packs to pinpoint where avalanches will

occur and operate avalanche guns as well as drop explosives from helicopters to control snow accumulation for avalanche control.

In all, nearly $57 million have been spent annually in the last few years on works which have a clear safety benefit to road users.

Perhaps the most dramatic example of highway safety benefits which can come from new construction will be the effects from the completion of the new Coquahalla route from Hope via Merrit to Kamloops. The Coquahalla highway is being constructed to modern freeway standards with divided roadways and grade-separated interchanges, and it'll be capable of being driven at a cruising speed of 100 km per hour through most of its length. As well as a general alignment of the road, safety features are being built in which are more sensitive to the real world of driver behavior and accidents. A good example will be the grading of the land between off ramps and the main highway to form gentle, unobstructive slopes to be used as recovery areas for the vehicles which run off the road at these points. Large sign poles and similar fixed objects will be placed nearer places where vehicles are prone to leave the road.

The new Coquahalla route will carry a volume of traffic which is presently using the narrower and difficult Fraser Canyon route. By diverting this traffic to the shorter four-lane divided freeway, it is predicted that traffic deaths will be reduced by two thirds and injuries and property damage accidents by one half. As well as the obvious benefits from pure tragic and painful losses to the victims concerned, a conservative estimate is that there will be economic savings in accidents amounting to over $7 million each year during the early years of the new route. This saving is in addition to the $40 million which will be saved annually from shorter journey times and less wear and tear on vehicles.

The economic cost saving from accident reductions will show themselves as fewer and lower insurance claims and help to keep the cost down. This benefit should in turn be reflected in future driver premiums. Although 9,000 km of trunk and main highways contain a high proportion of two lane roads through hilly and mountainous terrain, the accident record is surprisingly good. When we compare the number of accidents to the number of vehicles and calculate accident rates, we find that many of our mountainous routes have rates which are as safe as, or even safer than, those of highways in the parts of North America with flatter terrain.

We have a program for easing the summer congestion on these routes by the introduction of well signed passing places to allow slower vehicles, such as RVs, to pull over and allow the otherwise frustrated driver to get by. This kind of measure, together with careful signing of possible hazardous places, is undoubtedly playing a part in keeping the accident rate low.

Now let's look at the other side of the Ministry — the Motor Vehicle Department's role.

As our population increases, technology changes, attitudes change, new sanctions and programs are introduced by government as a means of reducing accidents. Even with the direct contribution these programs have in reducing the number of accidents on our highways, or in removing the bad offenders from our highways, there is still a lot of work to be done to improve the safety on our roads. This work cannot be done by government alone. It must be a joint effort.

The biggest task that all of us are facing is the one of driver attitude and alcohol involvement, whether the driver is a teenager, an adult driver or a professional driver. The Motor Vehicle Act was born because of the need to govern the operation of motor vehicles and drivers. The Commercial Transport Act resulted from the need to govern the operation of commercial vehicles. These Acts and Regulations, which are administered by the Motor Vehicle Department and the Police, contain strong laws that allow action to be taken against errant drivers and vehicle owners. I would suggest to you that these laws are as tough as any in North America, especially as they pertain to the drinking driver.

The policies and procedures that flow from the administration of the Motor Vehicle Act by the Superintendent of Motor Vehicles — who by the way is here this morning — are altering and controlling the driver and vehicle owner. For example, two years ago we introduced the new driver training program which illustrated the need for a new driver to be trained by a qualified instructor through more rigorous and comprehensive testing, as well as the need for more parental involvement where the driver is the teenager. This program has been most effective in introducing better trained new drivers into the system, a positive step.

Early indications show the introduction of the probationary two-year licence in 1982 has been effective in reducing accidents among first-time holders of a British Columbia Driver's Licence. New procedures for

motorcycle operators to meet before being granted a driver's licence are now being developed as a means to reduce the accident rate within this class of driver. Again, the emphasis will be placed on training by requiring the new rider to demonstrate certain skills before being authorized to operate a motorcycle in traffic.

In addition to the new sanctions being considered, I am pleased to say that the industry itself has displayed an interest in working with officials of the Motor Vehicle Department in developing a rider-awareness program. Other examples of programs introduced recently as a means to reduce accidents are: increased police enforcement, educational programs jointly developed by my Ministry and other agencies, the Insurance Corporation of British Columbia, and the CounterAttack program, to name a few.

I'd just like to comment here and thank the Broadcaster's Association for their constant advertising about drivers and conditions. That's at no cost to the taxpayer; that's what I like about that program. All these sanctions or programs are directly related to ensuring that drivers, both old and new, are aware of their duties as responsible drivers, to work towards reducing accidents.

To illustrate the seriousness of the problem we all must address, there were approximately 62,000 drivers prohibited from driving a motor vehicle in 1983 in British Columbia. The breakdown in this figure is 10,000 were prohibited by the Superintendent of Motor Vehicles for having poor driving records, 19,000 were automatically prohibited upon conviction of a serious offense such as impaired driving, and 32,000 were prohibited at the roadside for a period of 24 hours because of suspected alcohol involvement. It may interest you to know that 32 percent of those drivers prohibited were between the ages of 21 and 25 years of age.

While I'm on the subject of statistics, it appears there is effectiveness being achieved through the programs I have referred to. Preliminary reports indicate that the number of fatalities to September this year will be 392, down from 449 for the same period in 1983, or the lowest figure for this period in the last four years. In summary, our accident picture looks better this year, so far. From January to September there were 98 passengers killed in motor vehicle accidents. Comparing this with the highest year, 1981, where 213 passengers were killed, the reduction is over 50 percent. In looking at that terrible year, 1981, and comparing it to the pattern developing this year, 1984 looks brighter as the number of pedestrians killed has decreased from 100 to 66, and total fatalities have decreased from 684 to 392. Compared to 1983 for the same period, January to September, 1984 shows a decrease of 57 fatalities.

I know many persons and organizations are studying the entire accident problem, whether it be alcohol-related, or related to driving habits. My government, too, is actively pursuing alternatives and new concepts to address the errant driver problem further. However, laws are not the only answer. It may be that additional sanctions will improve the situation further, such as a graduated licence scheme. But we must be careful as the introduction of new laws or sanctions must be reviewed carefully to ensure they work without overloading the taxpayer by increasing our court costs or other costs to Government, without achieving a long-term benefit for society as a whole.

In the area of the Province I represent, the hotel operators in Williams Lake have set up a special fund to provide transportation through the local taxi firms to drivers who drink to excess at one of the hotels. Where this occurs, the hotel staff call a taxi to take the driver home. Interestingly enough, when the driver returns the next day to obtain his car, he offers to pay the cost of the taxi. Thus, the cost to the hotel operator is very small. I'm also told that the police in Williams Lake now have a difficult time finding impaired drivers.

To cite another example of corporate involvement, a few weeks ago I had the pleasure of addressing a conference on hazardous commodities. These persons have a remarkable safety record; in fact it is one their best kept secrets. They are in a business where the most minor mistake or miscalculation could result in the evacuation of a quarter of a million people. They owe their whole livelihood to the fact that they can and do operate at such a high degree of safety that no one even knows they are around.

It is time that organizations, business people and the very citizens who reside in our communities assume responsibility as the residents in Williams Lake have — become active and assist government in addressing the problem of driver control. Local involvement is effective, local involvement also reaches those citizens of our community who have not reached the driving age.

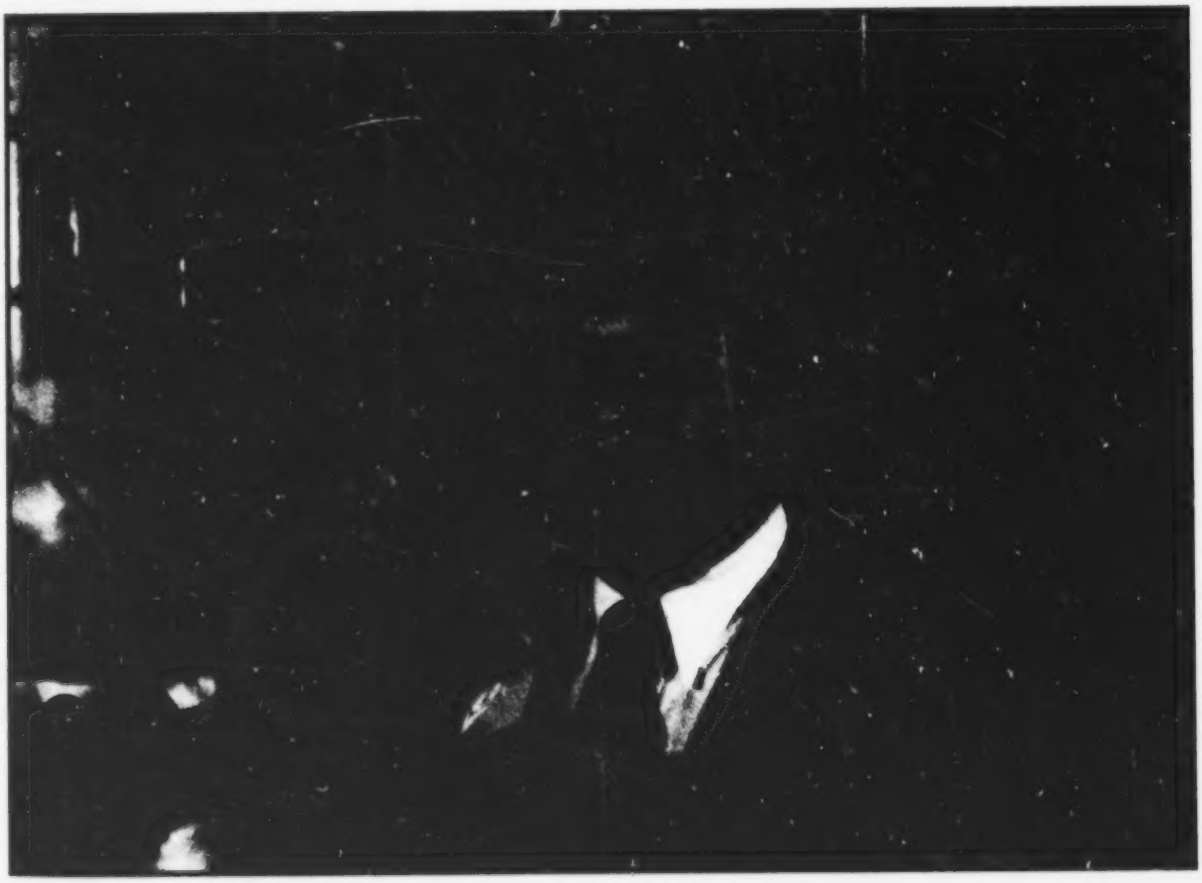
I could go on and bring to your attention the other safety programs currently carried out by my Ministry, such as the school bus inspection program. However, you are

about to hear experts in the field of safety to look at fresh ideas aimed at a segment of our society.

May I remind you, when you are addressing the problems, do not forget to address a concern of mine that is near to my heart. That being the class of driver which used to be referred to as the knights of the road. Being in the trucking industry, years back, those of us who drove for a living earned that title knights of the road. I understand these people are now referred to as the big guys. Again, it is a small percentage who are the bad actors. That gives everyone a bad name. In closing I say to those of you here to learn from others, listen closely, then go back to your area of responsibility to apply what you have learned in these sessions to make our highways a safer place to live.

# SPEAKER

**DR. ANTHONY STEIN** is Staff Psychologist at Systems Technology Incorporated. He has written more than 50 technical articles, reports, and papers. He is a member of the American Psychological Association, the Association for Humanistic Psychology, the Human Factor Society, the Western Psychological Association, the American Association for Automotive Medicine and other groups. His major research emphasis has been on impaired driver behavior.



# DRINKING/DRIVING WARNING SYSTEMS

**Speaker:** Dr. Anthony Stein, Staff Psychologist, Systems Technology Incorporated

I don't think many you are old enough to remember, but you used to need to blow up one of these for a police officer to prove whether or not you were drunk. This is the newest, latest, high technology version of a balloon. It's a digital balloon and being able to blow it up means I'm not drunk, right? Anyway, this didn't seem to be a very effective way of finding out whether or not people were drunk, so someone came up with another idea. They took a long needle and said, "if you can put it into the balloon, then you're not drunk; but if you can't put it into the balloon, then you are drunk." I know there's a lot of police officers out there, how many of you would like to give this to a drunk? So much for technology, let's get to the fun part.

Here's the title slide so you know what I'm talking about, it's a Drunk Driver Warning System, which is an in-vehicle deterrent for repeat offenders. I'd like to start with some background, so you'll know where this whole idea came from, and the fact that it is not something new. In 1970 the National Highway Traffic Safety Administration (NHTSA) of the United States Department of Transportation, as well as General Motors, investigated what were called first generation devices.

NHTSA put out a call to anybody who had a system that would fit in the car that would deter drinking drivers. There was a real problem about 20 devices were submitted, and, unfortunately none of them worked. In 1973 NHTSA decided to look at second generation devices, ones that could be incorporated into an in-vehicle interlock. At that time the idea was an interlock: if you couldn't pass the test, you wouldn't be able to start the car. Instead of looking for a device that was already developed to go into a vehicle, NHTSA was looking at the some kind of a test that might be sensitive to alcohol impairment, and which could be developed into an in-vehicle system.

In 1976, after extensive legal investigation, NHTSA shifted the idea from an interlock to a warning system. The liability implications of an interlock were just far too great. From 1976 to 1977, 11 Critical Tracking Tasks, or C.T.T.-based Drunk Driving Warning System units, were built — I'll get into what the C.T.T. is later — and finally from 1978 to 1983, we did field testing on the feasibility of a Drunk Driver Warning System.

What is a Drunk Driving Warning System is obviously the next question. It's an in-vehicle system which is designed to detect impaired drivers and then prevent them from operating a motor vehicle. I'd like to impress on you that we're talking impaired drivers, we're not talking only about drunk drivers. Impairment can come from lots of things. Alcohol is the substance everyone's been talking about here, but impairment can be due to drugs, fatigue, stress, noise, having a fight with your boyfriend or your girlfriend or your husband or your wife, failing a Bar exam. There are a lot of things that will cause impairment; and so we were interested in looking at an impairment detection system, not a drunk detection system.

This project that we completed, which was building of the units and the feasibility testing, was funded by NHTSA. At this point, and anywhere I can, I'd like to give them as much credit as possible, because were it not for NHTSA and enormous amounts of money and incredible support from very few individuals in that organization, I wouldn't be here telling you about this. The system would have died. The project involved obtaining a lot of cooperation and support. We were looking at feasibility; we were not looking at effectiveness. We needed to know whether the whole concept of this kind of a system was possible.

Since the major way this type of system will be used is through judicial requirements on repeat offenders, we needed to know whether we would have the support of law enforcement, attorneys, judiciary, defendants, the legislature, D.M.V., citizens' action groups, the media, the general public, and finally the offender.

The C.T.T. system detects driver impairment through a quick and simple behavioral test. I have a version of it with me if anyone wants to look at it later on in the day. The test is a Critical Tracking Task, developed by Systems Technology for NASA, close to 25 years ago. It was developed to determine whether or not astronauts were capable of performing manual control tasks in a weightless condition.

So this, along with teflon, is brought to you by the space program. It's been used by the Navy, the Air Force, the Department of Transportation, foreign governments, private research firms and in an enormous number of research studies.

As I said, we were interested in impairment and these previous studies have looked at impairment due to alcohol — much of this research has been done on alcohol, and literally thousands of subjects have been tested. Also tested were: illicit drugs prescription drugs, stress, fatigue, motion, confinement and noise have been tested, and this task has been found to be sensitive to impairments in all of these things. It's shown a consistent dose response relationship with alcohol, and that's a real key point.

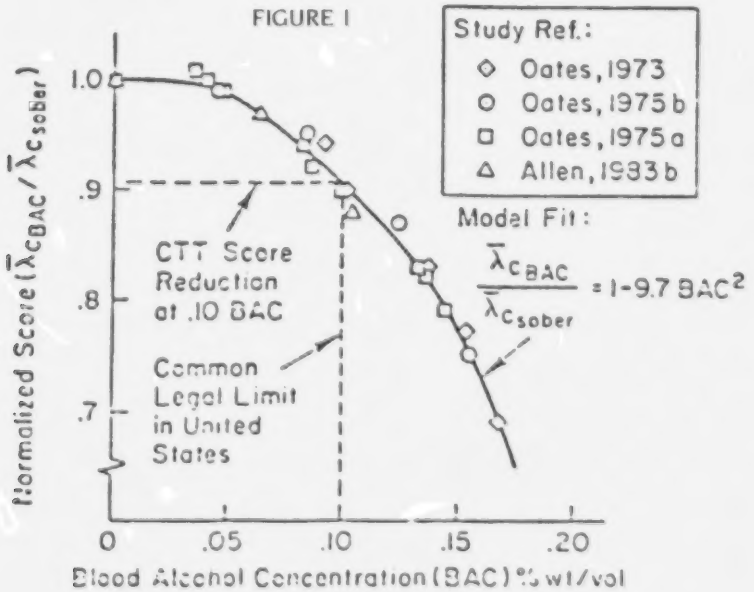
If I can show that the test is sensitive to alcohol and has a clear dose response relationship, and if you're impaired due to something else, I can imply that that impairment is equivalent to an alcohol impairment. So I can say, I don't know why you performed the way you did on the test, but I do know that you're performing the same way you would be performing if you had a BAC of .10 or .08 or .23 or whatever. Therefore, you shouldn't be operating a motor vehicle. The system could care less what's causing the impairment — only whether or not it's there.

To give you an idea what that dose response relationship looks like, we picked randomly four of the many alcohol studies, defined a model which is this solid line, and tried to fit the data to the model (Figure 1). You'll notice that the data fits the model very very well and, in fact, when I show this slide to pure researchers, I get accused of making up the data because it's just too good a fit. It turns out that every piece of alcohol data that has ever been plotted falls right along that line so we have an extremely consistent dose response relationship.

What's the Drunk Driver Warning System then? The first feature is that vehicle operation is not impaired. Anyone who wants to can get in the car, put the key in the ignition, start the car, and go. There is, however, going to be a problem if you choose to do just that. It has a test and a series of alarms. You have to pass the test in order to deactivate the alarms, this is a critical part of the design. This system isn't one where someone can say, "You know, I think I've had one too many. I'm not going to take the test because I might fail." The only way to turn the alarms off is to take the test. The alarms are the emergency flashers flashing all of the time (as soon as the ignition is turned on), and, if the vehicle is driven over 10 miles an hour, the horn will start honking once a second. It tends to say, "Here I am, look at me."

Everyone in the room is chuckling, but if you were to see a car going down the street with the emergency flashers going and the horn honking once a second, what would you do? We knew several things before we started the research. We knew a lot about how alcohol impairs driver ability. We also knew that drunk drivers don't think they're driving in anyway differently than they do when they're sober. In fact, they're doing everything they can not to be detected. They'll go a little bit slower because they know they don't want to get caught speeding. They'll stop a little bit early for a red light — possibly, when it's still green — because they don't want to get caught running a red light. They certainly don't want to drive a car that has the flashers on and the horn honking.

FIGURE 1



While I said vehicle operation is unimpaired, impaired drivers choose not to drive the vehicle when the alarms are activated. We don't want to impair vehicle operation, as I said, because of potential liability. I'll give you a couple of very quick examples. What happens if you have to rush a child to the hospital? You really don't want a car that won't start and if it really is that much of an emergency, regardless of your blood alcohol level, you may never be able to pass that test.

In this case, having your emergency flashers and your horn honking are actually to your advantage. It means you don't have to think about it and if you happen to get pulled over by a police officer, that's even better. You'll get an escort to the hospital. A second example — let's say that you happen to have the system in your car: you are completely sober: you are involved in an accident on the freeway that is not your fault: you are taken away by ambulance: if the system were an interlock the car won't move. All of a sudden you have a municipal entity exposing itself to liability because it can't get your vehicle off the road. These are two of many reasons why you don't want to disable a vehicle.

What specifically was our research? First we conducted laboratory tests. We wanted to correlate the Critical Tracking Task performance with actual driving. We used a driving simulator for the actual driving, and used vehicles equipped with the Drunk Driver Warning System to gather the C.T.T. data. We brought in first offense drunk drivers who were sentenced to participate as part of their sentence.

Let me first explain that to pass the test you are allowed up to four trials. You only need to pass one of those four trials. If you don't pass, the alarms stay activated for ten minutes, at which point you can try again. We dosed the subjects to the design BAC: had them go out into the car, take the test four times, wait 10 minutes, take it four times, wait 10 minutes, and take it four more times. We then put them in the simulator and had them drive for about half an hour through a pre-determined driving scenario. During the scenario the subject was trying to go from point A to point B: to accomplish this he (or she) needed to negotiate curves, avoid obstacles, and try to complete the course as safely as possible.

What happened? First if we look at total accidents versus blood alcohol concentration, we find a baseline number of accidents. To insure this we present a potential accident situation in the simulator every 30 to 40 seconds. It's a lot more than you're going to find in the real world: but, if we don't have accidents, we don't have data: and if we don't have data, I can't do data analysis and I won't be here talking to you.

On Figure 2, the first thing to note is the baseline number of accidents, indicated by the line marked "unimpaired accidents." Each bar, representing a particular test BAC, is divided into two areas. The shaded area represents those individuals passing the CTT test, and the open areas indicate the number of accidents for individuals failing the test. Finally, the percentage number found at the top of each bar indicates the percentage reduction in accident involvement that would occur if individuals failing the test chose not to drive.

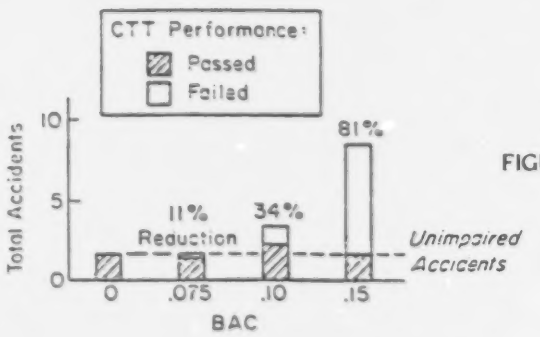



FIGURE 2

At the time we conducted this research there were very few per se laws existing in the United States, and it was generally accepted that anything between .10 and .15 was an automatic plea bargain. So, we were asked to design detection strategy to detect at least 80 percent of the drivers at .15 and hopefully get 50 percent at .10. We didn't quite get our 50 percent at .10, but we did get our 80 percent at .15. We can adjust the pass level to be more sensitive at .10 or .08, or anywhere that is requested. This figure represents what we were asked to do. You will also notice that data is in the shaded area at .15. These data are for one person whose arrest BAC was better than .30, so it is not at all surprising to us that he was able to test unimpaired at .15. He passed the test and had no increase in accidents over his baseline. The rest of the people, however, had a massive increase in accidents. Thus, were able to conclude from the laboratory tests was that if people failing the test chose to not drive, we should see massive reductions in traffic accidents.

We also conducted field tests to determine the operational feasibility of this concept. As I said, we needed cooperation from a lot of different people, a lot of different organizations. The whole concept might appear wonderful, but what if you got everybody's cooperation until it came time for sentencing?

Since personal freedom is something that, in the States, is considered paramount, what if the defendant said, "You know, Your Honor, I don't care what else you do to me, but I'm not putting one of those things in my car." That would be the end of it. It wouldn't ever work. Or if a judge said, "Technology is wonderful and great, but forget it! If you think I'm using that as a sentencing tool, you're crazy." Again, we would've had no way of making it work.

One of our goals was determining operational feasibility. We used two courts in the Los Angeles area, and tested 17 convicted second offense DWI's. That's the reason I'm stressing that this is a feasibility test — not an effectiveness test — because 17 subjects, when there are over 24,000 second offense convictions in Los Angeles County in a year, is not a very large percentage.

What were our results? First, everyone involved felt that the tests were extremely successful. We were able to pass legislation to allow this research to happen which meant we had legislative approval. (We had to change California drunk driving laws to allow this as a sentencing alternative.) We had no problems with restricting the person's driver's license to use of the DDWS equipped vehicle only. We had no problem with judicial processing and we received support from attorneys, the media, and citizens' groups and, more importantly, the defendants thought this sanction was acceptable and also felt it was in their best interest.

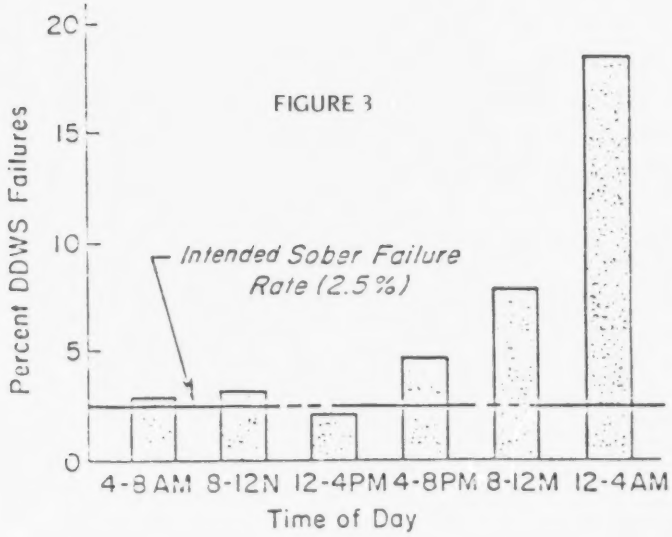
Many of the subjects we had wanted to buy our prototype units: "Let me put this thing in my car now." This system is not for everyone and, in fact, if someone gets up and says "I've got the answer to the drunk driving problem," grab your wallets real tight because, unfortunately, there is no one answer.

The DDWS sanction will work for a particular population of drunk drivers: Those people who are basically socially responsible but have a drinking/driving problem. It will not work for the individual who says, "Your Honor, here's my driver's license. I'll never drive again." Two weeks later he's in front of the same judge because he hit someone when he was drunk and driving; unfortunately there are a lot of those people out there. These people would put this system in their car and break their turn indicator bulbs, or cut the wires, or do something to the system to try and circumvent it. They'd be caught, but the system would never work.

However, there are an enormous number of people out there to whom losing their driving privilege not only harms them, it harms their community. If you look at where I live, Los Angeles, not being able to drive means I can't work. There is no effective public transportation. For me to take a bus to work would cost me over $10 a day and take 2-1/2 hours each way. That's not even close to practical. So, if I were the person who was being offered the choice of the DDWS sanction or loss of my driver's license, there's no question that I would embrace the DDWS with open arms.

What was some of the more interesting data? If we look at Figure 3, we see the percent of Drunk Driver Warning System failures as a function of the time of day. The line marked Intended Sober Failure Rate isn't really intended, it's the price you have to live with because people vary, and because the DDWS is a machine. Unfortunately, there are some sober failures.

Failing the test does not mean you're drunk (or otherwise impaired). It means you failed the test, which is why the ten-minute wait. If you failed it because you happened to be distracted on two of the four tests, and the other two you weren't doing too well, ten minutes is plenty of time to regain your composure. If you're drunk, ten minutes is not enough time to sober up.




Again, looking at Figure 3, from four to eight in the morning, from eight to noon and from 12:00 to four, actual test failure is around the 2-1/2 percent sober failure rate. From four to eight in the evening, the failures start to climb: "Let's stop at the bar on the way home and have a few drinks." Instead of stopping at the bar and having a few drinks, what if we also have dinner and have a bottle of wine with dinner and an after-dinner drink. All of a sudden, it's eight to midnight, and looking at the data we see failures start to climb even more. The most interesting data are the percentage of failures we get from 12:00 to 4:00 a.m. Bars close in California at 2:00 in the morning, and guess what? Eighteen percent of the attempts from midnight to four in the morning, the time when the bars close: are failures.

An other interesting feature of these failures is that, in every case, we have to assume this individual would have driven the car. We know that as soon as they were trained to take the test, each person, got buzzed, and went out and tried to pass this test to determine whether or not we were pulling their legs. They found they couldn't pass it, so we know that when they thought they were drunk, they weren't even getting in the car.

Each of these failures indicate a time when the person didn't think he or she was drunk. They got in the car intending to drive and they told us this: "Gee, I didn't think I had any problem. I was going to drive home. I can't believe it failed me." We had 155 impaired test failures. That's 155 times that somebody would have gotten in a car and driven home; and for only 17 people, each having a car for only six months. That's 155 times people would have driven drunk, and we had already altered their behavior in that they wouldn't even attempt the test or driving if they knew they were drunk.

We did, however, have three subjects drive with the alarms activated. One of them drove 11 times, which sounds horrendous. None of those drives was over 30 seconds long, however. He would park the car and go into the bar, come out, fail the test. Since the car was parked in an area where, if it was there from four to six in the morning it would be towed away, drove it around the corner. He literally drove it around the corner, parked the car, took a taxi home and picked up the car the next morning. He really didn't "drive," since he didn't drive home and he lived about 20 miles from the bar.

One of the other subjects got in the car 2:00 in the morning — failed the test: tried it 10 minutes later, failed it: tried it 10 minutes later, failed it: waited two hours, tried it and failed it: waited another hour, tried it and failed it. At 7:00 in the morning after attempting the test for four hours or five hours — he was probably so exhausted he never would've passed it — he drove. He drove home at under 10 miles an hour the whole way. We took what was potentially a very dangerous situation and made it into a relatively benign one.

Where do we go now? It would be nice to tell you that the next step is full-scale implementation through judicial and voluntary means. While i'd love to be able to tell you this, our research only showed that the concept and the

system were feasible. We did not show the effectiveness of a multi-user system installed in the offender's vehicle. The 11 units that were built fit 1978 Chevy Novas, and are a one-user system. We conducted a research project designed to determine whether we should go any further. The answer, we believe, is yes!

We should go further. We need to design a research program which will test the effectiveness of a multi-vehicle multi-user system. This research will involve refinement of the multi-user system commercially-available, microcomputer technology. The system using I can show you later runs on a $200 computer which has about four times the computing power the test needs. Today we are not talking about expensive equipment. The 11 prototypes we tested cost $20,000 each; they were hand wired, and used then state-of-the-art technology, and used a microcomputer chip that cost $550. Today a chip that will do 20 times what that one does, can be purchased at any Radio Shack for $4.99.

Technology has advanced in the last 15 years, thankfully.

We also need to have this system available on a large-scale basis as a sentencing tool. We don't want to test 17 people any more. We want to test hundreds, if not thousands. We need to make the necessary legislative changes that will allow this research to occur and, if the research proves to be successful, will allow use of the system to continue — this is very comprehensive legislation. Those of you who are in that field have some idea of what I am talking about. We need to worry about such things as what happens if somebody who has this system installed in their car — and has had it for 20 years — ends up driving with the alarms activated. Since this person has been clean for 20 years, certainly they shouldn't have the same kind of legal problems as someone who, two weeks later, is found driving with the alarms activated. Finally, we need to do long-term effectiveness testing which will involve extensive installation of DDWS systems in the user's vehicle, and at the user's expense.

**Question #1**
Dr. Stein, does this apply for passengers that are intoxicated, one who comes into the car and drives with a non-impaired driver?

**Dr. Stein**
This system is only for the driver. The driver takes a test prior to driving. It has nothing to with passengers whatsoever.

**Question #1** cont'd
It doesn't activate if the passenger in the car is impaired.

**Dr. Stein**
It has no way of knowing what the passenger is doing. I'm sorry. I didn't describe exactly what the test is. It's like balancing a broomstick on the end of your finger. If you remember when you were little kids, balancing a broomstick is a pretty easy thing to do. We make the broomstick get shorter in length as time goes on. If you try and balance a pen or pencil right now, you'll find that it is impossible. Somewhere between a broomstick and a pencil is the length that you're capable of balancing when you're unimpaired. We look at that and compare it to what your score is when you attempt the test and, from that, we determine whether or not you are impaired.

In a car, you either have a meter with a needle that's trying to fall off the center and you're correcting it, or a little LCD — which is what a digital watch is made of — and you have a little dot trying to move off the center. You use the steering wheel to correct it. So it is a steering task which has nothing to do with passengers. It does not measure breath, measure how much alcohol you have in your system.

**Question #2**
Did you ever think of putting these in bars and testing them there?

**Dr. Stein**
Well, there are a lot of reasons for not doing that. One reason is that you need to train the people to take the test prior to being able to determine whether or not they're impaired. The training takes about an hour to an hour and fifteen minutes a day, over two days. Second, I would be opposed to it for the same reason I am opposed to breathalyzers in bars: it tends to promote game playing. The "I can prove that I'm more drunk than you are and it is only going to cost me a quarter to find out" syndrome. I don't like that idea. I've seen it happen too much.

If I go to a party and take a portable breath machine with me, people get more drunk than they would than if I don't take it. I see it happen — "Oh, the machine's here, we can see how drunk we get" — and so the same thing could occur with this in a bar. Currently we don't provide any feedback as to what your score is — only whether you pass or fail. If the system were placed in a bar we would have to provide score feedback, and what you've created is a drunk video game. Somebody can make a lot of money on it but I don't think the cost of making that money is worth it.

**Question #3**
My question relates to the possibility of having some surrogate complete the test, like in valet parking, or the sober wife or girl friend, and yet the drunk driver insists on driving. Have you solved this problem by some kind of calibration or careful tailoring for the individual?

**Dr. Stein**
Well, a combination of two things. First, is the calibration and tailoring for the individual tend to preclude others passing the test. Second is an interlock part of the system which has a seat weight sensor, switches in the doors and things like that. Once you do take the test, any major change in the driver's position (caused by the person moving off the seat), or if the seat weight changing more than the certain percentage when the vehicle is not moving, or the doors open, or the windows open more than a certain amount, then you have to retake the test. So that negates that problem.

The other thing that we've done is aim the display so that it's very difficult for anybody but the driver to see it. I have attempted to pass the test hanging over the shoulder of someone from the back seat. When it is set for my pass level, I can't do it. I can't pass that way.

The other problem that the drunk would run into is how many people would knowingly take a test for someone that they knew was drunk and then let them drive? It's a little bit different from a doorman helping someone who is probably drunk into a car. It's a very willful and wanton act and, if anything happened, the "helper" would be wide open for litigation. I don't think there are a lot of people who, knowingly, would do that for someone. So we've made it. I won't say impossible, but pretty close to it.

**Question #4**
My question is do you find that people that habitually drink a little bit every day drive better under more alcohol that people that don't drink every day?

**Dr. Stein**
You're saying habitually drink a little bit; people who habitually drink a little bit are probably still impaired. Our research has shown that we are dealing with extremely heavy drinkers. As an example, I can clearly remember one individual who I tested. I picked him up in the morning and had a wonderful political conversation with him on the half-hour drive in; he also read the paper. He blew an .11. I turned to him and said, "Did you use any mouth wash, or Binaca or anything like that?" "No," he said, "I had kind of a rough night. I drank a little wine about midnight," and I just kind of looked at him. He was at .11 at 9:00 in the morning. He drank "a little wine" at midnight the night before. He was terrible at zero. But zero, for him, was not sober. That was not a normal state of affairs for him. He probably woke up at .07, .08, and he was unimpaired at those levels. The problem with BAC is that people don't drink to a given BAC. People drink to some subjective feeling of impairment. They drink till it feels right and, for a heavy drinker, feeling right is not .08 or .10; it's .16, .18, .23, .25. One thing we have found is that a heavy drinker will tell you "I'm a much better driver at .10 than a light drinker" is true, and we can prove it. Heavy drinkers don't stop drinking at .10, however. They stop drinking at, say .16, and at .16 they are more impaired than the light drinker was at .10. If you look at where people choose to stop drinking, the heavy drinker is much more of a problem. Down at the lower levels, when they wake up in the morning, before they started drinking, they're probably not as much of a traffic safety problem.

**Question #5**
Dr. Stein, you're referring to the alcoholic. The alcoholic that drinks everyday has more alcohol in his bloodstream than a non-alcoholic.

**Dr. Stein**
Oh, there's no question about that. Yes, I'm referring to somebody who is definitely an alcoholic. You do not attain BAC's of over .30 without being an alcoholic.

**Question #6**
Just in regard to that, how did you establish a baseline in the people who were actually alcoholics?

**Dr. Stein**
On those very heavy drinkers, we still use .00 as our baseline. On that particular piece of research, if you look at our curves for all of our data — anything that might include impairment — you have a little dip at about .03, and we dosed them at various doses. We obtained BAC readings of .02, .03, .05, .07, .09, .10, .11, .13, .15. At .00, they were a little bit worse than they were at .02, and then impairment begins to climb. We didn't try and establish what their baseline was. We said "you've got to come in sober," and a lot of them hated us for it; and a lot of them really hated us for making them sober up before taking them home. We'd make them get down to .05 before taking them home. They hated us. They were just getting started.

# SPEAKER

**DR. ALAN DONELSON** is a senior research scientist with the Traffic Injury Research Foundation of Canada. Some of the projects he has participated in include the identification of alcohol and traffic safety strategies and priorities for the future; the study of cannabis and alcohol in traffic fatalities; the development of a national fatality data base; the development of a health promotional paradigm; strategic planning in safety; the development of educational programs on drinking and driving, youth in motor vehicle accidents; and policy analysis studies for the federal Department of Justice.

# THE COMPLEX PROBLEM AND VARIED SOLUTIONS

**Speaker:** Dr. Alan Donelson, Senior Research Scientist, Traffic Injury Research Foundation

In listing the theme for this presentation, the conference booklet refers simply to "the problem." As you may suspect, and perhaps even dread, my presentation does deal with the *alcohol-crash problem*. Thousands of reports and papers have been published and millions of words have been written and spoken about the alcohol-crash problem. This conference alone has probably generated many more thousands of words on the subject. So here I am, last in line to have a say, preceded by eloquent colleagues who have already covered the entire waterfront. And here you are, as community leaders, threatened with the bleak, if not annoying, prospect of hearing it all again. Repetition may be the key to learning but this, you might say, is ridiculous. By now you can recite the bottom line by heart: The problem is big and something — anything — must be done about it. Only we don't know exactly what. No matter how much has been said about the problem, we always seem to end up with many more questions and issues than answers.

Perhaps I can serve you best by summarizing a few key points and by discussing what I believe is a crucial, hitherto missing element in our overall response to the problem. That element, for lack of a better term, I call *community action:* Initiatives to reduce the problem *in, by,* and *for* the community. This strategy, if you will, encourages the participation and involvement of *all* members of the community — not just the victims, not just the professionals, and not just a handful of community leaders to shoulder the load.

To make a case for community-based initiatives I shall touch on the following topics: (1) the nature and magnitude of the alcohol-crash problem, stressing only its remarkable complexity; (2) trends over time, illustrating the frustrating persistence of this problem despite long-term outlays of public funds to deal with it; (3) responses to the alcohol-crash problem, which are many in number and diverse in type; and, finally, (4) the importance of community-based initiatives. In short, I'll describe the complexities of the problem, the continuing challenges we face, and the opportunities for real and lasting breakthroughs in the coming months and years.

The first topic, then, is a very familiar one — the nature and magnitude of the problem. When we hear politicians or researchers — like myself, for instance — say that a big, persistent problem is complex, we often quickly translate that to mean the following: *If all else fails, complicate it.* In some cases, no doubt this is an accurate translation. Nevertheless, for other problems, like the alcohol-crash problem, *not recognizing complexities can lead to failure.*

Medicine provides good examples of this point.

In medieval times it was assumed that disease was caused, essentially, by bad blood. Bloodletting became the obvious and standard treatment. Many patients lost their ability to resist disease, not to mention their lives, before the general assumption of bad blood as the cause of disease was challenged and shown to be simplistic.

Much later came the idea of "one disease, one cause." This idea worked well for acute, infectious disease caused by germs as known then, but it actually hindered progress in understanding chronic, non-infectious conditions. Today we recognize the complexities of cancer and heart disease. Millions of dollars are spent not only on treatment of persons suffering from these disorders; millions are also spent in the search for more effective treatment and cures. No one expects to find a single, curative treatment. Many approaches will be needed, especially preventive measures.

Prevention may be most effective if people at risk themselves take action by changing certain behaviors or life styles strongly associated with these diseases. We already see progress in this direction. The basic point I want to make is this: effective solutions to the alcohol-crash problem will require, first and foremost, recognition that the problem is complex and that our knowledge is presently inadequate. In this context, we have to realize that each of us may have and hold dear certain assumptions about the problem as if they were basic truth. Like old assumptions about bad blood, or the "one disease, one cause" model in medicine, some of our strongly held assumptions may not be appropriate or right all the time. Some may even hinder progress.

One thing that research can tell us is whether our assumptions do indeed hold in the real world of people. The purpose or role of research is to advance the state

of knowledge about the problem: to identify groups of people at high risk of injuring or killing themselves or others; and to generate ideas for intervention, both strategies and tactics.

As a researcher, I almost feel apologetic that I can't give you hard facts and proven ideas to take back home to your communities. The fact is that we, as a society, have done very little in the way of thorough, in-depth research on the problem itself. Efforts to reduce alcohol-crash losses have always stressed countermeasures to the exclusion of careful, systematic study of the problem. Regrettably, research seems often perceived as doing nothing or studying the problem to death. Ironically, most people probably accept the principle that *understanding a problem* — especially one that persists despite decades of various countermeasure programs — *is essential to its successful control*. Research into the causes and prevention of cancer and heart disease, which are unsolved health problems of comparable magnitude, receives tremendous support from both government and private citizens. Research on the alcohol-crash problem is often questioned, ignored, or avoided.

The low status of drinking/driving research is due, in part, to the belief that present knowledge is adequate. I, for one, question that belief. Having heard the questions and issues raised yesterday and today, you might also question that belief. For example, in the war against drunk drivers, *who* and *where* is the enemy? Is the enemy all persons who drive after drinking? Are drinking drivers who cause serious traffic accidents different in some way from drinking drivers who do not have accidents? I submit that we have few hard data to answer these and many, many other key questions. Research to date, however, does call into question policies that treat all persons convicted of alcohol-impaired driving the same.

During the past three or four decades we have created several stereotypes that have shaped popular opinion and perceptions. There is Good Time Charlie, a lush more to be pitied than censured. Other images include the "killer drunk"; the "social drinker" who had a few too many; the "alcoholic" or "problem drinker," more sick than criminal. We know today, however, that a seemingly straightforward question — Who is the drinking driver? — is not so easy to answer as we once may have thought. We know that drinking drivers include people of all driving ages, persons from all walks of life and many who are otherwise responsible, upstanding members of our communities — even our friends and neighbors, even at times, much as we hate to admit it, you and me. We at the Traffic Injury Research Foundation have often used a quote from Walt Kelly's Pogo to bring this point home: "We have met the enemy and he is us." That people feel uncomfortable about this statement, or take issue with us on this point, simply underscores the need for more definitive information to resolve the issue. Nevertheless, we can state with certainty that labels like "drunk drivers" conceal far more than they reveal. We can safely assume that more than one kind of approach or program will be needed to reach the many diverse groups of people in our communities who drive after drinking. As yet, though, we simply do not know which programs will be effective for what groups of people.

The phrase "war against drunk drivers" offers a useful analogy. If a general threw his troops and armaments into battle the way we as a society have approached this war, you might think that the general was begging for defeat. Actual military campaigns emphasize mission-oriented strategy and not just tactics. More importantly, there is clear recognition of the need for *intelligence gathering* — what we civilians call research — both before and after engaging the enemy. Intelligence operations provide facts needed for decisions at all levels. Based on reported intelligence, strategies are reviewed, plans are revised, and resources perhaps redirected — especially in wars of attrition. To help me make this point a Florida state trooper shared the following aphorism with me at the recent Life Savers III Conference — "Planning without action is futile; action without planning is fatal."

In dealing with the alcohol-crash problem, therefore, research as intelligence gathering becomes an integral, functional component in our overall campaign. Research is not some academic exercise for ivory-tower scientists. It serves to increase our understanding of the problem, to identify high risk groups, and to develop effective measures tailored to the different people who are part of the problem. Research and evaluation also serve to measure our progress over time and become "self-awareness tools" to help us know what we are doing.

Having made this plea for efforts to advance knowledge about the problem, I also want to mention a common pitfall. To persuade people that the problem is big and that it warrants action, researchers and others quote statistics. Sometimes, however, the *human* dimension is totally lost in the numbers. We would all do well to remember that a single accident with one death is a *tragedy* for those involved. How can anyone calculate the cost of pain and grief suffered by victims of senseless crashes due to alcoholimpaired driving? I believe that, if

research is to play its potentially valuable role in the overall social response to end this problem, we have to avoid the dichotomy between the cold-hearted statistics and the heart-felt emotion of concerned citizens. The recent years have featured rather strained relations between citizen activist groups and the so-called "expert community" — a situation that can only hinder progress. Thus, when I conclude, as I do, that solutions will require recognition that this problem is complex and that knowledge to generate solutions is presently inadequate, I want you to know that I am not saying that we need "more research" and "better statistics" *before* we take action. Immediate action is needed and wanted by all of us. I only hope that as we move forward, we devote enough time, energy and money to learning more about the problem and to refining our programs *in the process of taking action*. It seems to me that a society that collects over $2 billion in taxes on alcoholic beverages can afford to spend a few million to understand how and why damage to people is caused by the use of that product. To end up five or 10 years down the road knowing no more than we do now — perhaps faced once more with evidence showing no progress — seems to me just as senseless and tragic as doing nothing at all about this problem. Because we researchers do not seem to carry much weight with governmental or corporate decision-makers, it is up to you, as community leaders, to demand that kind of research, the kind of research needed to advance our mutual cause.

At this point you may be asking yourselves why I belabor the need for research. I can offer no better explanation for my apparently self-serving behavior than the following.

The total number of drivers fatally injured in Canada increases during summer months and decreases during winter months — a pattern that repeats itself each year with tiresome, frustrating, painful regularity. The number of *drinking* drivers fatally injured in Canada follows this pattern, too; over 80 percent of the drinking drivers had blood alcohol concentrations (BACs) greater than the legal limit. *Trend analyses show no change in this indicator of the alcohol-crash problem over time in Canada!* This result — no difference being made in 10 years of effort — in spite of so many different countermeasure approaches available to us: deterrence, education, health programs, technological innovations, and so on. We can, and many jurisdictions have, as Professor Ross suggests, redefine the problem and use tactics and measures general to traffic safety — like air bags — or to alcohol control — reducing, somehow, the availability of alcohol. All of these have been tried before, and without exception, all have been found far less effective than hoped.

We have reached a devastating conclusion: *There is no shortage of solutions, only a shortage of those that work*. Some people, and right now perhaps some of you, may think that nothing will work in light of our lack of real success. Before we become discouraged or give up hope we might reflect for a moment on how we have approached the problem in the past. Basically, we find our past efforts have been fragmented, uncoordinated, even conflicting, short-term, and, yes, at times half-hearted.

We have also learned another difficult lesson, one that has forced us to give up the assumption that a "magic bullet" — the solution — exists. *No one law, program, or other measure will or can produce substantial, sustained reductions in the problem as a whole*. We need concerted action along the many dimensions that contribute to the alcohol-crash problem. No matter which programs or strategies we choose to deal with the problem in the coming years, let us at least affirm that any action will be long-term, comprehensive, coordinated, and strategic in nature.

We are only now beginning to realize that social and cultural norms and attitudes help give rise to the problem itself. We have just begun to appreciate the importance of the social context in which the problem persists. I won't belabor this point. As Herb Simpson put it, "We are a society of drinking drivers." We call this widespread, dangerous behavior by various names — drinking/driving, alcohol-impaired driving, drunk driving, driving under the influence — and we still often blame the individual drinker who drives or the individual driver who drinks. Nonetheless, as stressed by Pat Waller and several others, there exist social conditions and cultural forces that give rise to and maintain drinking/driving behavior. If indeed the social context is important, and if we as a society of individuals can consider ourselves responsible at least in part for our collective norms and attitudes, then the past ineffectiveness of alcohol-crash countermeasures may stem from a basic root cause — *our unwillingness so far to change our attitudes and how we conduct ourselves on a day-to-day basis*.

I believe the time has come to consider innovative but demanding strategies, the aim of which are to shift social norms, to create a context in which driving after drinking too much becomes personally and socially unacceptable and, ultimately, completely unnecessary. The goals of

changing social norms and decreasing the acceptability of driving after drinking too much do not seem like impossible dreams to me. These goals certainly did not seem impossible dreams to the United States Presidential Commission on Drunk Driving. The first two elements specified for any programs to be launched against drunk driving were those very two goals. (Remarkably, among all the many countermeasures recommended by the Commission, some of which are very innovative and radical — certainly departures from the history of alcohol and traffic safety — *nowhere in that document was there any mention of the need for efforts to increase understanding of how to accomplish those goals!*)

We may not be able to change human nature but human attitudes and behaviors seem much more malleable. How else could tobacco smoking go from glamorous to stupid in three decades? At the same time, let's be honest with ourselves and others. We still know very little about behavioral change in relation to the social, cultural environment in which change is to take place. Not having the answers, we will have to learn by doing.

Here I would like to share with you a few thoughts. They are not necessarily answers in response to the inevitable question, "Well then, Mr. Donelson, what *are* the solutions?" The distinction I want to make is that between *top-down interventions and bottom-up grassroots programs*. Perhaps the time has come to put *less* emphasis — notice that I didn't say put no emphasis — to put less emphasis on having somebody else do something about the alcohol-crash problem and more emphasis on ourselves taking greater personal and individual responsibility. I think that we have relied too long and too much on "government" to do something *to* or *for* us. It seems to me that a critical ingredient missing from past programs is the active involvement of community members.

In saying this, I do not mean that bottom-up strategies should replace government action — sort of like communities telling government, "Sorry, we'd rather get it on ourselves." What I am suggesting is that, in the absence of concerted, social action and broad-based community support, we can expect little or no progress. We have, after all, 100 years of experience in the traditional approaches we have applied in the past. At the same time, we face many challenges before comprehensive, community-based initiatives take root and sustain the momentum citizen action groups have imparted to this field.

Again, we have to be honest with ourselves. Without M.A.D.D. and her sister organizations, in the coming years we may face a depressingly quick return to a renewed cycle of concern and complacency. Considering the degree of concern we now witness, without the support, commitment and dedication of these volunteers, we can only go downhill from here. *One challenge we face is to realize and to acknowledge that we all share a common goal. We merely differ on how to reach it.* Part of the problem is, as Larry Ross pointed out last night, how we tend to define "the problem" differently. He used the blind-man-and-the-elephant metaphor. I would like to suggest that if all of us are blind — citizen activists, researchers, and community leaders alike — *then none of us really knows what we have grabbed hold of.*

However, we think we each have a piece of the beast. We probably do. Since no one I know can drop by and tell us what the whole looks like, we may have to resort to a simple tool but one not so easy to use — *communication*. Through dialogue we can pool our information, our perceptions and our ideas, and perhaps begin to get a better, more comprehensive idea of what the alcohol-crash problem really is. We may never achieve complete consensus on how best to deal with the alcohol-crash problem. We may, however, eventually create a social response that, as a whole, is much greater than the sum of our own, separate parts.

Mark Keller wrote, "What's needed is the wisdom to recognize that lawmaking is not the same as behaviormaking. What's needed is to discover how to change people's attitudes towards drinking, driving, and driving after drinking. Everybody knows that. But everybody is busy adding more laws. In this, the fashion has not changed." I strongly believe that this conference offers each of us an opportunity to begin to discover *how* to change attitudes, not by lawmaking alone, but by working together *in*, *by* and *for* our communities. Perhaps we can gain insights here into how to create a social climate that increases the acceptability of *not* driving after drinking too much. Personal example and peer pressure work both ways, for the better as well as for the worse. If we bring our efforts closer to home, then perhaps we as individuals, groups and organizations can have a greater impact than all the laws passed over the last century.

Lest I appear foolishly optimistic, I should also point out the practical implications of this community-based strategy. We will have to generate among ourselves the commitment and patience for longer-term strategic

approaches and to avoid relying solely on short-term fixes. We will have to demand adequate research and evaluation along with action programs. We will have to maintain continuity of effort lest we see a return of general public apathy. We will have to strive to establish the broad-based, comprehensive programs needed to deal with this complex social problem. And, finally, we will have to discover our own roles as community members so that communitybased initiatives can become a reality and not, as some may think, just a pipe dream.

Finally, I want to share with you a personal experience that brought home to me the reality and the challenge of community-based, individual action. I live in a small village about 35 miles south of Ottawa in farm country. As some of you will appreciate, it's the kind of community in which everybody knows everybody else, if not personally, then by reputation.

Several weeks ago, at night, a car came speeding down the road in front of my house. The driver failed to make a Dukes-of-Hazzard sliding turn at the intersection and ended up in the ditch. Moments later, I heard loud voices and some laughter. Two young men emerged unscathed and tried to push the car out of the ditch. Without too much thought, I telephoned the local police detachment and reported the incident.

I knew full well the likelihood that the driver had been drinking. All of the elements were there — young male driver, late on a weekend night, single vehicle accident, run off the road. Moments later the two young men came to my house. They seemed friendly enough, if a bit drunk. They wanted me to get a tractor and chain and to pull the car out of the ditch.

I didn't have — nor do I now have — a tractor or a chain. What I did have, suddenly, was a lot of fear. I found that I could not tell them face-to-face that I had called the police. I hemmed and hawed and behaved very unneighborly for those parts. I closed the door and did not agree to help them push the car out of the ditch. A police officer arrived on the scene, investigated, and after a while drove off with both men. The car remained behind abandoned, mired in the ditch.

The next day, coming home from a drive, I approached that intersection. I saw the same two men once again standing near the ditched car. Again I felt fear. Suppose they recognized me. Suppose they put two and two together and figured out that it was I who had reported the accident to the police. Suppose they decided to take revenge by doing some damage to me or my house some lonely night. Our closest neighbors are rather far away.

I can report to you with some relief that none of that has happened. But this experience did teach me a lot. Above all, *it showed me that personal action at the community level is not necessarily easy or straightforward.*

Another example comes quickly to my mind. When I join my neighbors for our next pot luck supper, how comfortable would I feel in making an issue out of my friends' driving home after drinking too much. Invariably, some of them do. Now I realize how attractive it can be *only* to advocate tough laws and stiffer penalties for drunk driving, *only* to push for, say, raising the drinking age or banning alcoholic beverage advertising. Having government or someone else do something to other people to prevent alcohol-impaired driving is far more comfortable, less demanding, less embarrassing than personal involvement. Yet, as one professionally and personally committed to ending the alcohol-crash problem, I also realize that individual initiative in the community is not only desirable but also *crucial* to making progress.

Experience, then, is indeed a hard teacher — one that test first and provides the lesson later. The lesson learned applies to *us* as well as "*them*." When each of us commits never again to drive after drinking too much, when each of us does not allow loved ones to drive after drinking too much, when each of us is willing to report to the police anyone who still insists on driving when impaired by alcohol, when each of us, the converted, in some way takes action to end the alcohol-crash problem, then — and only then — can we expect the social tide to turn strongly and permanently in our favor.

The alcohol-crash problem, I submit, is not intractable, but it will take more than words, posters, and Christmas blitzes to solve it. The grassroots, bottom-up approach can lay a solid foundation for long-range, comprehensive, strategic plans and programs. If we, the people, do not participate and actively involve ourselves, we have little right to demand that others "do something about the problem." If we take action and do what we — as concerned members of our community — can do, then we have every right to demand appropriate action by government, by industry and by all others who can contribute.

Working together, then, we can make a difference. To sum up these ideas, I would like to assert the following. Each

and every individual can make a difference for self, family, friends, neighbors, and community. The key to this really happening is *owning the problem*. If you are part of the problem, then you are part of the solution. And since we all pay taxes for the high medical care costs, the insurance costs and other damage done by the alcohol-crash problem, we *are* part of the problem.

In this context, responsibility is not blame or duty or burden. It is simply the *ability to respond* and take action in any way appropriate to yourself, your group or your organization. The formula for community-based action is simple but not easy — know the problem you seek to deal with, own the problem, take personal action, and support others to participate along with you.

Already we have succeeded in creating a tremendous degree of awareness about the problem. Now we have to transform that awareness into action at all levels of society, especially as I said, *in*, *by*, and *for* the community. Already, I think, we have produced results. For example, in Herman's cartoon house, all the guests wanted coffee, not after-dinner booze. When the social context becomes one in which driving after drinking too much is unacceptable and unnecessary, a drunk in the car will still not look nice but the difference will be a relief to all of us: for the car will be a taxi!

**Question #1**
Alan, I appreciate your stressing the idea community action and community involvement. What I'd like to share with you is some research that's being done by Kari Rumar in Sweden where they have extremely strict laws. Unfortunately, they've probably taken it societally too far. If you are picked up as a drunk driver in Sweden, the laws are fairly severe. And I stress fairly severe. The impression in North America is that they're much worse than they are.

What is very severe is the social implications. If you are picked up as a drunk driver, you will lose your job, you will lose all your friends, you will be ostracized from society. They have a tremendous suicide problem. We are, in that case, converting drunk driving — deaths of the drunk driver — to suicides and that is going too far.

I think there does need to be some mediation to make sure that it doesn't get to that point. In North Carolina, right now, it's a mandatory jail sentence and their increase in suicides in jail among 19 to 21 year olds is staggering also. It's not a simple problem. It's very complex and I appreciate the way you presented it as complex.

**Question #2**
I think maybe, Dr. Stein, you lost some thought of Alan's point too. You've obviously talked at lots of conferences like this. I think a lot of people look at the community groups and think they're stressing penalties. Why do we always get that reaction? Obviously he sees the need, he obviously sees the other things we are doing besides asking for law change. And yet, from people like yourself, we jump right back from the community groups and we say they want to change the law. Have we said that here at this conference?

**Dr. Stein**
No, and I don't think I implied that. I was talking about changes in society and the fact that those changes in society can go too far — only that the problem is extremely complex and we need to look at it as a very complex problem.

**Question #2** cont'd
Yes, but do we look at the offender and say that he is now committing suicide? Or do we look at the innocent victim of that offender, and with the same regard? Because — all the psychology lits that I get, I get so mad when I listen to psychologists again — it happens with professional, community groups.

We don't ask that you stop doing what you're doing, we certainly don't. And we certainly look at your expertise and listen, but why are we always . . . why are these psychologists all trained and geared into looking at the problems of the offender? That really irritates me. This offender again is being — let's stop and look at what's happening to this person. If we are going to ostracize them, what are we really doing when there's all these other victims out there who are innocent? Can somebody gear themselves towards what is the victim and why we are having to do what we are doing?

I think you lost a point and I think Alan's method of saying not changing laws, it's not for us to change laws, it's for us to ask that these people be dealt with in order that we can get on with our lives and be a responsible part of the community.

# S P E A K E R

**MR. MICHAEL B. McCARTHY** is Vice-President of Insurance Operations for the Insurance Corporation of British Columbia (a division which includes the Corporation's Traffic Safety Education Department). Born in the U.K., Mr. McCarthy had experience in the insurance industry in England and South Africa before joining Allstate's Canadian operation in 1965. He joined the Insurance Corporation of British Columbia in 1977. He was appointed Vice-President of Autoplan Underwriting in 1981.

# BRITISH COLUMBIA — WHERE DO WE GO FROM HERE?

**Speaker:** Mr. Michael B. McCarthy, Vice President, Insurance Corporation of British Columbia

My program says where do we go from here and no doubt it's home. Home, I think, means different things to different people. It's back where we do our thing — hopefully, because of this conference — somewhat inspired, somewhat better informed and, hopefully also, somewhat challenged. But for most of us, back to our grassroots thing, back to our small corner, where you do your thing and I do mine.

But moving away from the grassroots, it might be appropriate if I said just a little at this point about what's going on in the so-called ivory towers. A little background, first of all. It was in mid-1980, as the Motor Vehicle Task Force Report was being finalized, that a number of concerned people — many of them in this room — decided that the report should contain recommendations about the need for coordination in our province on traffic safety matters.

At that time we felt that, while lip service was being paid to coordination, there was, in fact, considerable evidence of groups and ministeries working in isolation, treading on each other's toes, overlapping on some issues, with gaps on others and a general impasse that we felt should be resolved. The task force report did, in fact, finally include a recommendation for a coordinating body.

In December 1981, a preliminary meeting was held under the chairmanship of Robin Bourne. He's the Assistant Deputy Minister of Police Services in the Ministry of the Attorney General and he would've liked to be here to say what I'm saying today. On April 8 of 1982, the group was formally constituted and it was titled the Continuing Committee for Traffic Safety. It reports to a triumvirate of ministers — Messieurs Fraser, Hewitt, and Smith. Membership is made up of senior representatives from the Ministry of the Attorney General, Ministry of Transportation and Highways, Ministry of Health, the Government Information Office, Association of Chiefs of Police, the Vancouver and Victoria police, and the Insurance Corporation of British Columbia. Most of the members of that committee are here today.

Our terms of reference are somewhat wordy; I won't read them to you. Suffice it to say that our purpose is more to provide a forum for coordination, for cooperation and for the seeking of consensus, rather than to tell anyone — government or non-government — what to do. We do not wish to direct so much as to provide leadership and guidance on traffic safety issues and try to ensure that at least the activities of government fit together into a coherent whole.

As part of our working structure, we want to create links through the membership of our committee with everybody who is interested in traffic safety in British Columbia so that as a united community we can move forward, complementing each others' activities. So what are we doing?

Well, apart from dealing with a lot of day-to-day ongoing issues, we have spent a fair bit of time shaping and adopting a long-term plan. The essence of this plan is to give priority, but not exclusive attention, to three major behavioral items: drinking/driving, seat belt wearing, and young drivers. The objective of this plan is to reduce the British Columbia fatality rate to the Canadian average by the end of this decade and that is a reduction of approximately 15 percent. As some of you are aware, we are working on a paper right now on the drinking/driving issue. We want to submit this to government for their approval early next year. Many, if not all of you here, have been or will be invited to let us have your views on the strategy and tactics.

We anticipate that this interim paper, as we see it, next year will recommend, first of all, some short-term actions based on existing research, some long-term actions similarly based, and considerable research and evaluation activities aimed at increasing our knowledge of the problem and, to quote Alan, "refining" our action programs as we proceed. We do, indeed, intend to take a long-term, comprehensive, coordinated and strategic view of things.

So, in closing, I would stress that we on the C.C.T.S., the Continuing Committee for Traffic Safety, certainly do not feel that we have all the answers. In fact, I think our feelings of inadequacy grow with every meeting we have and the more we try and wrestle with the problems. I do believe, however, that we have the will and the spirit to succeed. On behalf of the C.C.T.S., I want to say that we

look forward to receiving your help as we continue to deliver it. In that way, we may succeed in getting all the blind men at least represented in one room, and then, with communication and with consensus, we can plan for the demise of the beast.